



Older Adults

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According to the U.S. Census Bureau:

- The older adult population (elderly) has been growing substantially compared to previous years.
- It is estimated that the older adult population will more than double by the year 2050.
 - In 1900 : 1 in every 25 Americans (3.1 million) were over 65 years old
 - In 1994: 1 in every 8 Americans (33.2 million)
 - It is estimated that by the year of 2050: 1 in every 5 Americans will be over 65 years old, which is about 80 million people.

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Physiological Changes

- Occur with aging in all organ systems:

- Cardiovascular System
- Endocrine System
- Gastrointestinal System
- Musculoskeletal System
- Nervous System
- Renal System
- Respiratory System

- It is estimated that by the age of 70, organ systems and functions decrease by 50% which can affect the nutritional health of older adults.

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Physiological Changes: Cardiovascular System

- Reduced blood vessel elasticity
- Heart valves become more rigid
- Increased blood pressure
- Reduced oxygen uptake



Physiological Changes: Endocrine System

- Reduced levels of estrogen and testosterone
- Increased stress levels
- Decreased glucose tolerance
- Reduced levels of thyroid gland secretions

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Physiological Changes: Gastrointestinal System

- Saliva and mucus secretion decreases
- Difficulty swallowing food
- Missing teeth
- Slower breakdown of foods, due to lower levels of digestive enzymes.
- Decreased intestinal transit leading to impaired bowel function.



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Physiological Changes: Musculoskeletal System

- Reduced bone and muscle mass (lean body mass)
 - 2 – 3% decline in lean body mass every 10 years
 - Males gain on average 22 lbs more fat and lose 24 lbs of muscle
- Increased fat mass
- Decreased resting metabolic rate

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Physiological Changes: Nervous System

- Reduced appetite and thirst
- Sight, smell, taste, and hearing senses change
- Tend to sleep longer

Sight	<ul style="list-style-type: none">• Cataracts become present which are when the lens become less transparent• Higher risk of glaucoma (increased interior pressure inside your eye)• Macular degeneration, which leads to blurred central vision impairing ability to perform common tasks such as reading driving.
Smell	<ul style="list-style-type: none">• Hyposemia• When the smell is off it tends to then affect the taste of foods.
Taste	<ul style="list-style-type: none">• Hypogeusia• Tend to crave more sweet and salty foods• Number of taste buds reduced• Certain diseases, medications can affect taste
Hearing	<ul style="list-style-type: none">• Function of the inner ear decreases

Physiological Changes: Renal System

- Less blood flow
- Slowed glomerular filtration rate
- Reduced number of nephrons
- Impaired ability to clear toxins from the body.

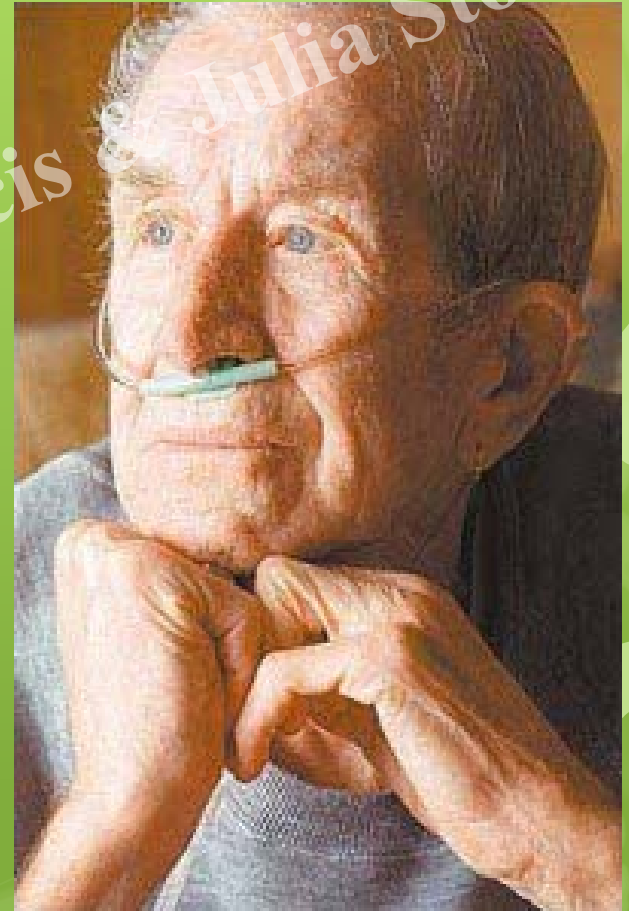


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Physiological Changes: Respiration System

- Reduced breathing capacity
 - lung surface area and elasticity decrease
- Reduced endurance and work capacity





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Nutritional Needs:

Kcal	Based on weight and physical activity level Men: ~2300-2400 Women: ~ 1600-2000
Protein	0.8g/kg body wt.
Carbs	130 g/day (45-65% of total calories)
Calcium	1200mg
Total Fiber	Men: 30 g/day Women: 21 g/day
Sodium	<1300mg
Vitamin C	Men: 90mg Women: 75mg
Fats	20-35% of total calories
Vitamin D	15 mcg
Zinc	Men: 11 mg Women: 8 mg
Iron	8mg
Potassium	4700 mg

Example: 65 years old moderate activity

Calories	Allowance		
Total Calories ▪ Empty Calories*	1800 per day ▪ ≤ 161 per day		
Food Group	Food Group Amount	“What counts as...”	Tips
Grains	6 ounce(s) per day	1 ounce of Grains	Tips
<ul style="list-style-type: none"> ▪ Whole Grains 	<ul style="list-style-type: none"> ▪ ≥ 3 ounce(s) per day 	<ul style="list-style-type: none"> ▪ 1 slice of bread (1 ounce) ▪ ½ cup cooked pasta, rice, or cereal ▪ 1 ounce uncooked pasta or rice ▪ 1 tortilla (6 inch diameter) ▪ 1 pancake (5 inch diameter) ▪ 1 ounce ready-to-eat cereal (about 1 cup cereal flakes) 	<ul style="list-style-type: none"> ▪ Eat at least half of all grains as whole grains. ▪ Substitute whole-grain choices for refined grains in breakfast cereals, breads, crackers, rice, and pasta. ▪ Check product labels – is a grain with “whole” before its name listed first on the ingredients list?
Vegetables	2½ cup(s) per day	1 cup of Vegetables:	Tips
<ul style="list-style-type: none"> ▪ Dark Green ▪ Red & Orange ▪ Beans & Peas ▪ Starchy ▪ Other 	<ul style="list-style-type: none"> ▪ 1½ cup(s) per week ▪ 5½ cup(s) per week ▪ 1½ cup(s) per week ▪ 5 cup(s) per week ▪ 4 cup(s) per week 	<ul style="list-style-type: none"> ▪ 1 cup raw or cooked vegetables ▪ 1 cup 100% vegetable juice ▪ 2 cups leafy salad greens 	<ul style="list-style-type: none"> ▪ Include vegetables in meals and in snacks. Fresh, frozen, and canned vegetables all count. ▪ Add dark-green, red, and orange vegetables to main and side dishes. Use dark leafy greens to make salads. ▪ Beans and peas are a great source of fiber. Add beans or peas to salads, soups, side dishes, or serve as a main dish.

Fruits	1½ cup(s) per day	1 cup of Fruit:	Tips
		<ul style="list-style-type: none"> ▪ 1 cup raw or cooked fruit ▪ 1 cup 100% fruit juice ▪ ½ cup dried fruit 	<ul style="list-style-type: none"> ▪ Select fresh, frozen, canned, and dried fruit more often than juice; select 100% fruit juice when choosing juice. ▪ Enjoy a wide variety of fruits, and maximize taste and freshness, by adapting your choices to what's in season. ▪ Use fruit as snacks, salads, or desserts.
Dairy	3 cup(s) per day	1 cup of Dairy:	Tips
		<ul style="list-style-type: none"> ▪ 1 cup milk ▪ 1 cup fortified soymilk (soy beverage) ▪ 1 cup yogurt ▪ 1½ ounces natural cheese (e.g. Cheddar) ▪ 2 ounces processed cheese (e.g. American) 	<ul style="list-style-type: none"> ▪ Drink fat-free (skim) or low-fat (1%) milk. ▪ Choose fat-free or low-fat milk or yogurt more often than cheese. ▪ When selecting cheese, choose low-fat or reduced-fat versions.
Protein Foods	5 ounce(s) per day	1 ounce of Protein Foods:	Tips
<ul style="list-style-type: none"> ▪ Seafood 	<ul style="list-style-type: none"> ▪ 8 ounce(s) per week 	<ul style="list-style-type: none"> ▪ 1 ounce lean meat, poultry, seafood ▪ 1 egg ▪ 1 Tablespoon peanut butter ▪ ½ ounce nuts or seeds ▪ ¼ cup cooked beans or peas 	<ul style="list-style-type: none"> ▪ Eat a variety of foods from the Protein Foods group each week. ▪ Eat seafood in place of meat or poultry twice a week. ▪ Select lean meat and poultry. Trim or drain fat from meat and remove poultry skin.
Oils	5 tsp. per day	1 tsp. of Oil:	Tips
		<ul style="list-style-type: none"> ▪ 1 tsp. vegetable oil (e.g. canola, corn, olive, soybean) ▪ 1½ tsp. mayonnaise ▪ 2 tsp. tub margarine ▪ 2 tsp. French dressing 	<ul style="list-style-type: none"> ▪ Choose soft margarines with zero <i>trans</i> fats made from liquid vegetable oil, rather than stick margarine or butter. ▪ Use vegetable oils (olive, canola, corn, soybean, peanut, safflower, sunflower) rather than solid fats (butter, shortening). ▪ Replace solid fats with oils, rather than adding oil to the diet. Oils are a concentrated source of Calories, so use oils in small amounts.



Health Conditions



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Health Conditions

Alzheimer's Disease

Risk Factors:

- Family history
- Low levels of vitamin B₁₂ and folate result in homocysteine build up

Preventions / Remedies:

- There is no cure
- Increase vitamin B₁₂ and folate to reduce the amount of homocysteine build up
- Recommended to have a caretaker present
 - Help in the kitchen like cooking and maintaining adequate dietary intake
 - Preventing foodborne illness

~ 10% of older adults have Alzheimer's disease

Health Conditions

Dehydration

Risk Factors:

- Avoiding all fluids
- Eating only dry foods for 24 hours
- Fever and elevated temperatures

Prevention / Remedies:

- Drink plenty of fluids (at least 1500mL a day = ~ 6 cups)
- Try to limit the intake a sugary beverages
- Slowly rehydrate

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Health Conditions

Gastrointestinal Diseases

Risk Factors:

- Excess alcohol
- Smoking
- Obesity
- Coffee
- Inactivity
- Dehydration
- Some medications
- High iron

Preventions / Remedies:

- Low fat diet
- Don't lay down right after eating
- Reduce coffee intake
- Exercise
- Increase dietary fiber intake
- Increase fluid intake

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Health Conditions

Heart Disease

Risk Factors:

- Hypertension
- Diabetes
- Elevated LDL cholesterol (>130mg/dl)
- Cigarette Smoking
- Family History

Preventions / Remedies:

- Reduce cholesterol intake
- Increase fiber, fruits, & vegetables
- Limit salt intake
- Healthy cooking
- Exercise
- Maintain healthy weight
- Reduce stress

Health Conditions

Hypertension

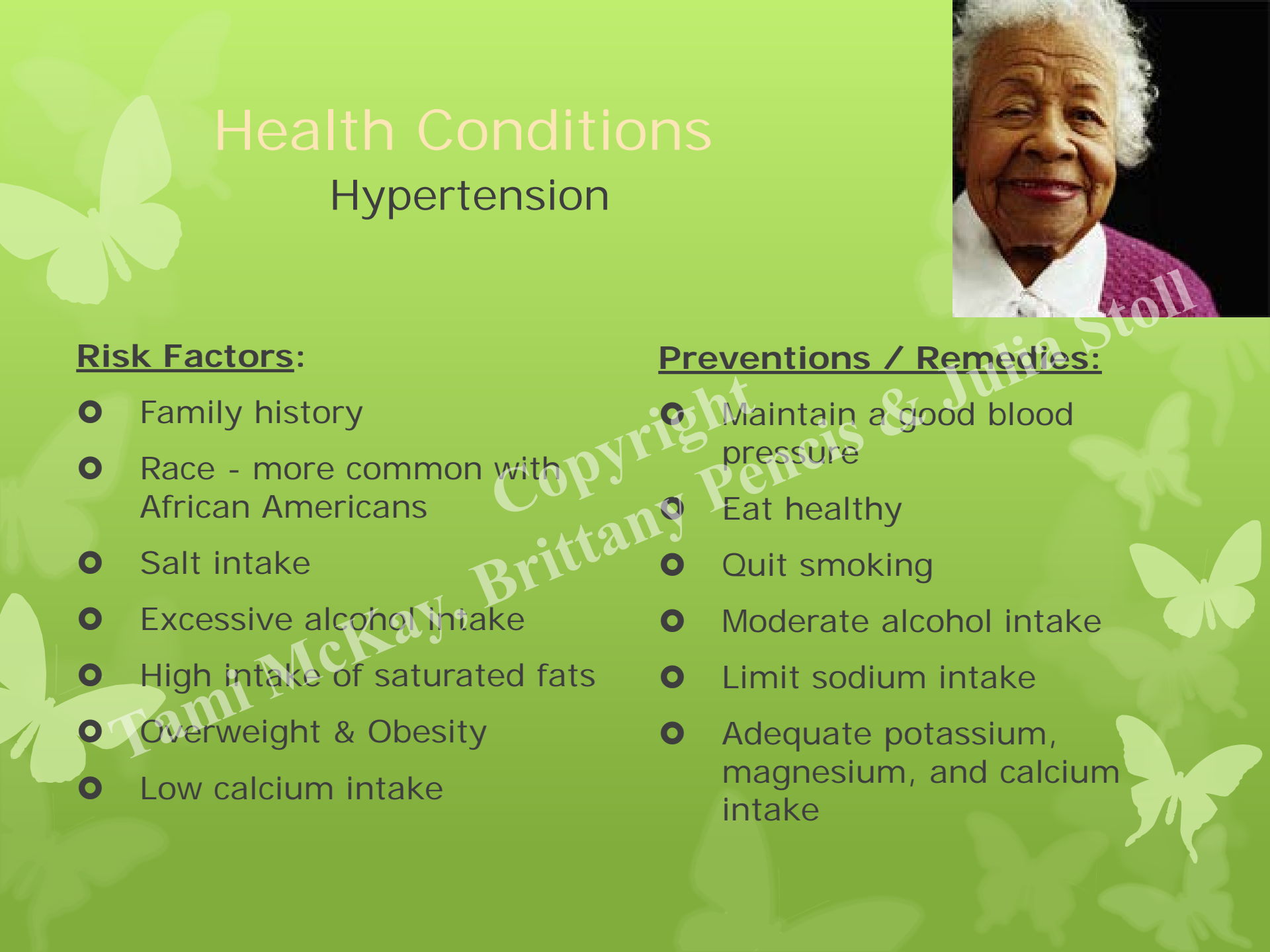


Risk Factors:

- Family history
- Race - more common with African Americans
- Salt intake
- Excessive alcohol intake
- High intake of saturated fats
- Overweight & Obesity
- Low calcium intake

Preventions / Remedies:

- Maintain a good blood pressure
- Eat healthy
- Quit smoking
- Moderate alcohol intake
- Limit sodium intake
- Adequate potassium, magnesium, and calcium intake





Health Conditions

Oral Health (Periodontal Disease)

Risk Factors:

- Xerostomia (dry mouth)
- Deficiencies of nutrients and vitamins
- High sugar content
- Poor oral hygiene
- Plaque

Preventions / Remedies:

- Good oral hygiene
 - Brushing, flossing
 - regular cleanings
- Limit high amounts of sugar intake in diet
- Chewing xylitol-sweetened gum

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Health Conditions

Osteoarthritis

Risk Factors:

- Overexposure to oxidants
- Obesity –weight stressing the joints
- Obesity – secretion of cytokines in adipose tissue
- Low intakes of vitamin C and D

Preventions / Remedies:

- Weight loss
- Meet recommended levels of Vitamin C and D
- Flaxseed contains Omega-3 fatty acids

Osteoarthritis affects ~27 million adults 25 years of age and older.

Health Conditions

Osteoporosis

Risk Factors:

- Inactivity
- Low levels of vitamin D (<400/600 IU) and calcium (<1200 mg)
- Consistently high protein and/or low fruit and vegetable intake
- Cigarette smoking
- Heavy alcohol consumption

Prevention / Remedies:

- 1200 mg of calcium per day
- Eat healthy well balanced diet
- Increase fruits and vegetables
 - Improves the calcium balance
- Eat greens that are rich in vitamin K
 - Helps stimulate osteoblasts and osteoclast for active bone remodeling
 - Caution should be taken for those who have a history of strokes because vitamin K aids in blood clotting
- Limit caffeine consumption
- Exercise and use weight bearing activities

Health Conditions

Pressure Ulcers



Factors:

- Lack of mobility
- Dehydration
- Inadequate calories and protein intake
- Certain medications
- Excessive moisture or dryness

Preventions / Remedies:

- Nutrition is critical to meet recommended DRI's
- Vitamin C and Zinc
- If on bed rest reposition frequently
- Good hygiene
- Not smoking

Health Conditions

Stroke

Risk Factors:

- High blood pressure (long term)
- Family history
- Physical inactivity
- Carotid artery disease
- Depression
- Living in poverty
- Cigarette smoking
- Excessive use of alcohol

Preventions / Remedies:

- Maintain a good blood pressure
- Eat healthy
- Quit smoking
- Moderate alcohol intake

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Food Safety

- Older adults have a weaker immune systems which makes them more vulnerable to foodborne illnesses.
- Poor personal hygiene, improper holding temperatures for foods, and contaminated foods are a few examples that can put the elderly at risk.
- Help keep food safe:
 - Wash hands and prep surfaces often
 - Separate raw foods from cooked and ready to eat foods
 - Do not keep foods in the danger zone (40°F to 140°F)
 - Cook foods at a safe temperatures
- Unfortunately there are times when one might not be able to take proper care of themselves, for example, with Alzheimer's disease.
 - There are community food and nutrition programs available. A few examples:
 - Seniors' Farmers Market Nutrition Programs
 - Meals-on-Wheels
 - Store-to-Door services
 - Some even have a personal care giver



Physical Activity

- Adults in their 70's and 80's can achieve a level of fitness associated with people 30 years younger.
- Warm up and cool down before and after activities for ~5 – 10 minutes for each.
- For general health, exercise for 30 minutes on most days of the week
- Strength training programs can reverse loss of strength in elderly resulting in less falls and better performance of ADL's
- Makes sure to drink plenty of water and stay hydrated



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Course Book

Older Adult powerpoints

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Class Presentation Scenario

Anna is 85 years old and has been admitted to the hospital for pneumonia. After admission she was also found to be dehydrated and to have a mild case of iron deficiency anemia. She is very worried about how her 87-year-old husband Ralph will manage while she is absent. She reports that Ralph has a “weak heart” and has become rather forgetful. A brief medical history reveals the following:

Physical data: Anna reports that she is 64 inches tall and usually weighs 130 lbs. However, she measures 63 inches tall and 111 lbs. She is somewhat surprised at her weight loss and admits that she has been a bit fatigued lately and has not been eating well. She also mentions that her dentures are bothering her and that keeping up the house and caring for Ralph is tiring. Her blood pressure is 130/85.

Medical history: About 10 years ago Anna was admitted for a mild bout of diverticulitis. She was advised to consume a high-fiber diet to prevent a recurrence. She reports that she occasionally has abdominal pain and feels gassy but has not had any hospitalizations since then. She is not taking any medications. She has tried several dietary supplement for “energy and stamina” but has not been taking anything for the past 6 months.

Social history: Anna and Ralph maintain their own home. Anna does not drive, and Ralph can no longer drive. Their son, Sean, and his wife, Yvonne, live nearby and had been stopping by weekly to take them grocery shopping. For the past month Sean and Yvonne have brought groceries because Ralph was becoming increasingly tired, confused, and irritated at the store. Yvonne has offered to bring some meals over, but Anna has been reluctant to accept her help. While Anna is in the hospital, Sean or Yvonne will stop in daily to check on Ralph and bring him dinner. Anna and Ralph have few other visitors. Most of their friends have died or moved to be near children. Anna is physically able to leave the house for shopping and social activities but rarely does so. She keeps in touch with a few friends with notes and phone calls.

Diet history: Anna prepares three meals daily. She tries to avoid sodium because Ralph is on a sodium-restricted diet and favors soft foods because chewing is painful. A typical day's intake is as follows:

8:30 am	½ cup coffee with 1 tsp. nondairy creamer
	2/3 cup instant oatmeal
	½ cup skim milk
10:00 am	1 cup tea
	2 or 3 small cookies
12:00 pm	1 cup of low-sodium, canned soup (usually chicken noodle or vegetable)
	1 slice white bread
	1 tsp. margarine
	½ cup instant pudding
	½ cup apple juice
5:00 pm	½ cup pasta
	½ cup tomato sauce with 2 oz. ground meat
	½ cup low-sodium, canned green beans
	½ cup skim milk
8:00 pm	1 cup soda (noncaffeinated)

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ADIME

A: 85 yo female adm. to hospital with pneumonia. Pt stated ht. of 64", usual wt. of 130#, was surprised by unintended wt. loss and states has not been eating well and feeling fatigued. She states dentures make chewing painful so prefers soft food. Pt was recommended high fiber diet for previous diverticulitis dx 10 yrs ago. Pt c/o abd. pain and gas. She tries to avoid sod. because husband follows sod.-restricted diet. States she is very worried about 87 yo husband with "weak heart" and forgetfulness at home w/out her. Son and DIL are caring for him. Pt states daily activity includes caregiver to husband, cooks 3 meals/day, does not drive, rarely leaves house for errands or socializing, has few visitors. Son and DIL provide groceries weekly; have offered meals, but pt. reluctant to accept.

Admit Dx: pneumonia, dehydration, mild IDA

Ht: 63" wt: 111# Usual wt: 130# (unintended wt. loss)

% wt. change: 15% % usual wt: 85% (mild malnutrition)

BMI: 19.7 (normal)

Current intake 24-hr recall: 1341 kcal

EER: 1600 kcal Protein intake: 1.25g/kg

BP: 130/85 (pre-htn) Drug/supplement intake: none

D: Nutrition Dx 1: Inadequate energy intake (NI-1.2) related to anorexia of aging as evidenced by unintended wt loss of 15%, dietary intake below EER, mild malnutrition, and dehydration.

Nutrition Dx 2: Biting/chewing (masticatory) difficulty (NC-1.2) related to pain caused by dentures as evidenced by favoring soft foods and decreased caloric intake.

I: Dx 1: Priority modifications (E-1.2) Educate pt. on need to increase kcal and fluid consumption immediately to prevent further wt. loss and improve nutrition status. Recommend daily diet plan of nutrient dense foods, at least 1500 ml of fluid, fiber intake of 21g, sodium less than 1500mg.

Iron supplement (ND-3.2.4.3). Educate pt supplement may cause constipation; start with low dosage to limit GI side effects and increase as tolerated.

Referral to community agencies/programs (RC-1.6) Refer to MOWAA for meal delivery service.

Dx 2: Referral to other providers (RC-1.5) Recommend pt. visit dentist upon discharge to address ill-fitting dentures that are negatively impacting nutrition status due to pain.

M/E: Follow-up in 2 weeks to monitor wt. (AD-1.1.2), total energy intake (FH-1.1.1.1) and overall types of food/meals (FH-1.2.2.2).

Evaluate Hgb (BD-1.10.1), Hct (BD-1.10.2), ferritin (BD-1.10.10), iron (BD-1.10.11), total iron binding (BD-1.10.12), transferrin saturation (BD-1.10.13) in 1 month.

Ensure pt. is connected with MOWAA and has accepted meal services. (FH-6.1.4)

Ensure pt. receives dental care for ill-fitting dentures to eliminate mouth pain impacting ability to eat. (CH-2.2.1)

REFERENCES/RESOURCES

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Nutrition411.com

HN510 ppt. slides

mowaa.org

QUESTIONS

What might account for the discrepancy between the height Anna remembers and her measured height?

- Postmenopausal women are at risk for a condition known as “shrinking height”; a compression and/or bone fracture in the spinal column that leads to loss of height.
- The risk of fractures increases with many factors such as lack of exercise, smoking, poor nutrition, and even race.

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What do Anna's current height and weight suggest about her nutritional status?

- Anna's shrinking height can be attributed in part to loss of skeletal muscle and bone mass, as well as a poor diet deficient in nutrients to prevent loss of bone density.
- An analysis of Anna's diet shows she is not consuming enough calories; over time this low intake could contribute to weight loss. Additionally, she is quite under the DRI of most vitamins and some minerals which may have contributed to her shrinking height.
- The decline of caloric intake and weight loss could also indicate Anorexia of Aging, possibly related to pain from the dentures and perhaps some undiagnosed depression.

List the factors that may have contributed to the development of pneumonia.

- A normal process of aging is decreased immune function which leaves the elderly more susceptible to infections.
- Anna's diet is low in protein and important micronutrients that support the immune system. Her immune system was compromised and the stress and fatigue of caring for the home and Ralph added a compounding layer of risk.

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List the factors that may have contributed to Anna's dehydration.

- The discomfort from her dentures diminished Anna's desire to drink.
- The elderly have a decreased ability to recognize thirst.
- Fever related to the pneumonia may have impacted her dehydration.
- Many ill patients are dehydrated when they're admitted to the hospital because of decreased intake due to their illness.

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List the factors that may have contributed to Anna's anemia.

- The elderly have decreased iron absorption related to a decrease in gastric function.
- Diet analysis shows her protein intake is low and her ability to absorb iron may have declined due to lower gastric production. Chronic illness also contributes to iron deficiency anemia; if Anna was ill for some time before seeking treatment, her pneumonia may have contributed.

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Anna's dietary intake is not adequate to maintain her health. List ways to increase each of the following. Include the use of community nutrition programs for older adults where applicable.

i. Overall kcal and nutrient intake

- Initial protein and energy supplementation to aid her recovery, improve her nutrition, and support recovery.
- follow-up visits with dietitian after discharge to review intake logs and support changes
- Meal delivery from a service such as Meals on Wheels so that the foods she eats support a healthier and more balanced intake.

ii. Fluid intake

- Initial IV fluids while she is in the hospital to slowly rehydrate her before sending her home.
- Recommend she drink water with every meal
- Higher quality meals from deliveries would contain fruits and vegetables containing water

iii. Iron intake

- Ensure she is consuming meats high in iron such as liver, round steak and hamburger as well as beans.
- Add fortified cereals and oatmeal to her breakfasts.

iv. Fiber intake

- Have Anna add to her diet fiber rich foods such as whole grains, fruits and vegetables
- Meal deliveries with a balanced plate will assist with this area as well.

REFERENCES/RESOURCES

Myplate.gov, Super Tracker

HN510 Older Adult PowerPoint slides

Nutrition Through the Life Cycle, Fourth Ed., Brown