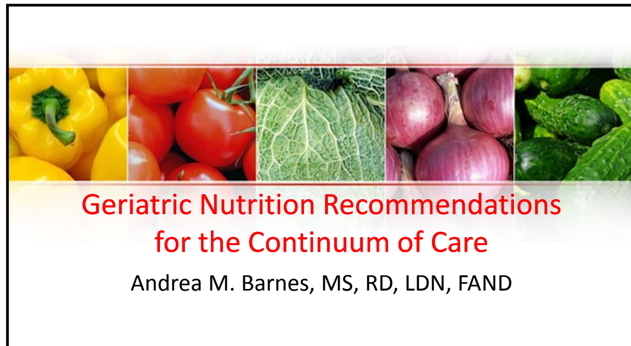
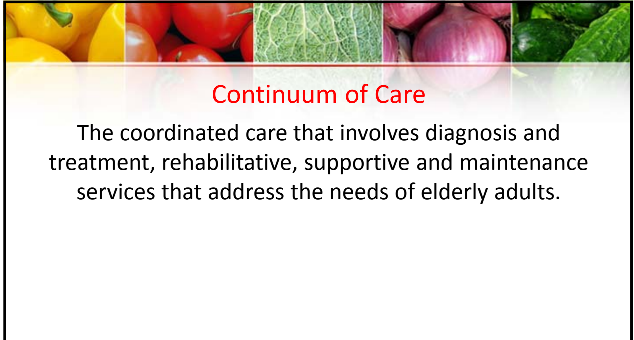
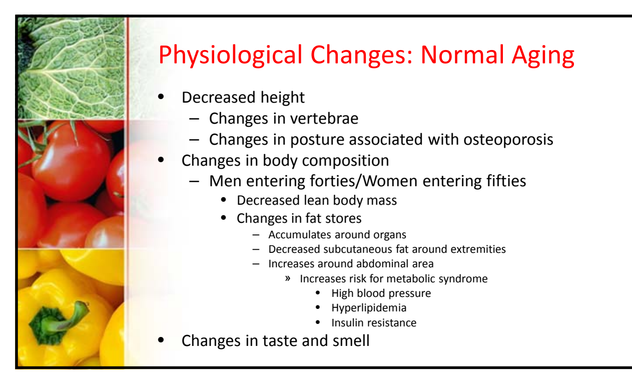
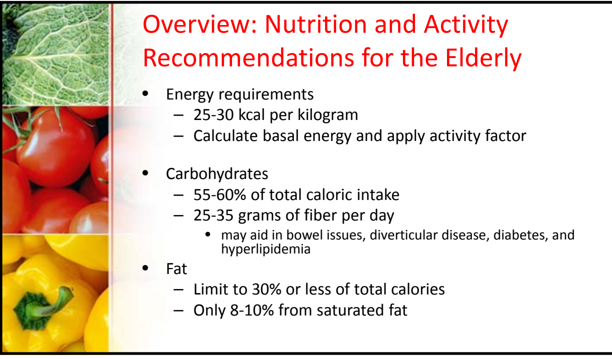
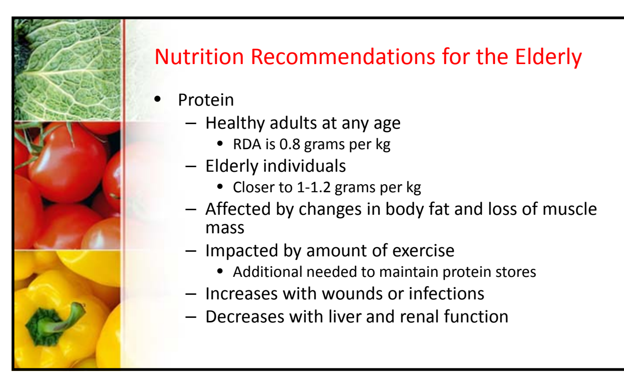

Geriatric Nutrition Recommendations for the Continuum of Care
Andrea M. Barnes, MS, RD, LDN, FAND

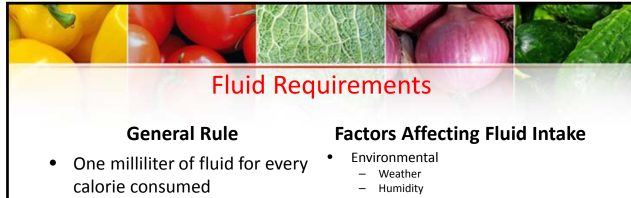

Continuum of Care
The coordinated care that involves diagnosis and treatment, rehabilitative, supportive and maintenance services that address the needs of elderly adults.

Continuum of Care: NUTRITION
Medical Nutrition Therapy
Screening
Assessment
Monitoring
Evaluation
Education, training, nutritional counseling
Food assistance programs
Case management and clinical care services


Physiological Changes: Normal Aging
Decreased height
Changes in vertebrae
Changes in posture associated with osteoporosis
Changes in body composition
Men entering forties/Women entering fifties
Decreased lean body mass
Changes in fat stores
Accumulates around organs
Decreased subcutaneous fat around extremities
Increases around abdominal area
Increases risk for metabolic syndrome
High blood pressure
Hyperlipidemia
Insulin resistance
Changes in taste and smell


Overview: Nutrition and Activity Recommendations for the Elderly
Energy requirements
25-30 kcal per kilogram
Calculate basal energy and apply activity factor
Carbohydrates
55-60% of total caloric intake
25-35 grams of fiber per day
may aid in bowel issues, diverticular disease, diabetes, and hyperlipidemia
Fat
Limit to 30% or less of total calories
Only 8-10% from saturated fat


Nutrition Recommendations for the Elderly
Protein
Healthy adults at any age
RDA is 0.8 grams per kg
Elderly individuals
Closer to 1-1.2 grams per kg
Affected by changes in body fat and loss of muscle mass
Impacted by amount of exercise
Additional needed to maintain protein stores
Increases with wounds or infections
Decreases with liver and renal function



Fluid Requirements

General Rule

- One milliliter of fluid for every calorie consumed

Alternate Recommendations

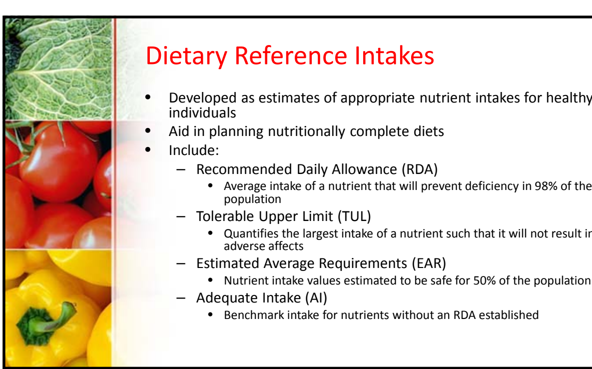
- 30mL of fluid for every kilogram of body weight
- 1500-2000mL of fluid per day

Factors Affecting Fluid Intake

- Environmental
  - Weather
  - Humidity
  - Temperature
- Endocrine
  - Changes in renin-angiotensin system
- Physical
  - Reduced mobility
  - Chronic disease
  - Decreased ability to sense thirst
- Emotional
  - Fear of incontinence

2010 Dietary Guidelines

- Healthy Body Weight for adults ≥ 65 years
  - Overweight
    - No further weight gain
  - Obese
    - Lose weight
  - Weight loss decreases risk of and effects of chronic disease
- Sodium Intake for adults > 51 years
  - Decrease sodium intake to 1500mg/day
- Vitamin B12 for individuals > 51 years
  - Focus on consuming foods rich in vitamin B12
  - Consider adding supplement



Dietary Reference Intakes

- Developed as estimates of appropriate nutrient intakes for healthy individuals
- Aid in planning nutritionally complete diets
- Include:
  - Recommended Daily Allowance (RDA)
    - Average intake of a nutrient that will prevent deficiency in 98% of the population
  - Tolerable Upper Limit (TUL)
    - Quantifies the largest intake of a nutrient such that it will not result in adverse affects
  - Estimated Average Requirements (EAR)
    - Nutrient intake values estimated to be safe for 50% of the population
  - Adequate Intake (AI)
    - Benchmark intake for nutrients without an RDA established

Dietary Supplements

- Often taken without physician knowledge or supervision
- Use caution when adding supplements to a regimen
  - Risks and effectiveness are not entirely known
- Most commonly used supplements by elderly individuals
  - Glucosamine and Fish oil – joint pain
  - Garlic – cholesterol control
  - Gingko biloba – improved claudication in the legs
  - St. John's wart – depression
  - Kava – anxiety
  - Valerian – sleep disorders
  - Saw palmetto – male urinary problems/enlarged prostate

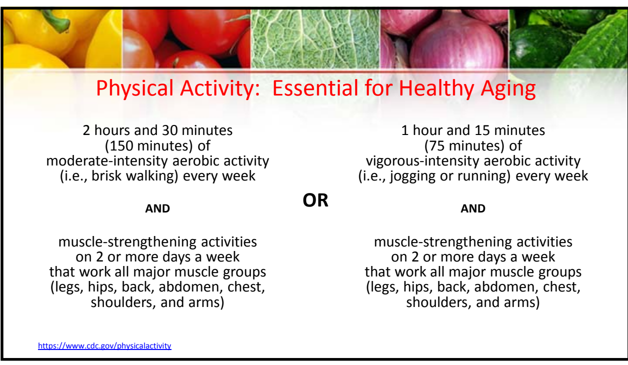
Megavitamin Therapy

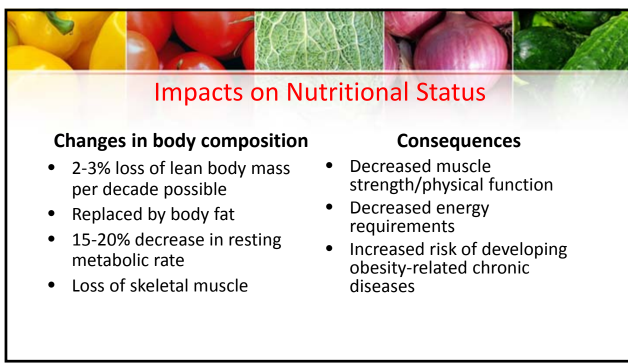
- Consuming greater than ten times the recommended dietary allowance of vitamins
- Belief in aiding treatment of various diseases
- Negative implications
  - Vitamin E
    - may interfere with warfarin and may cause a type of bleeding syndrome
  - Vitamin D
    - may cause hypercalcemia and cardiac arrhythmias
  - Vitamin C
    - may cause the urine to be more acidic
    - can lead to changes in how drugs are absorbed
      - Acidic drugs absorbed easier
      - Basic drugs excreted more rapidly
    - May interfere with warfarin
    - Rebound effect once stopped – possible scurvy

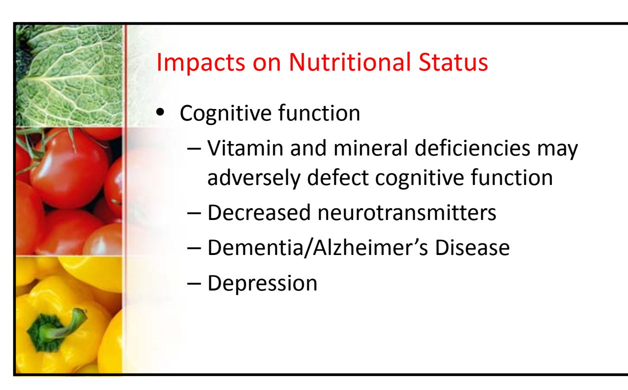
Physical Activity: Essential for Healthy Aging

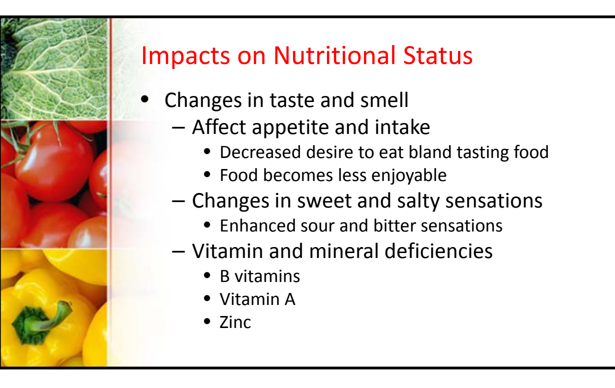
- Reduces risk factors associated with coronary heart disease (CHD)
  - Blood pressure control
  - Lipid reduction
  - Blood glucose control
  - Weight control
- May relieve pain
  - Improved bone density
  - Reduction in vertebral fractures
- Positive effects on mental status
  - Mediated depression
  - Improved sleep quality

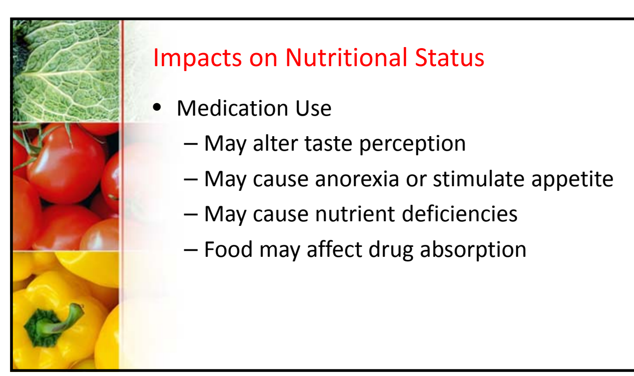
Physical Activity: Essential for Healthy Aging
Exercise programs
Aerobic activity
Muscle strengthening
Range of motion/flexibility exercises
Start slowly under supervision of MD or trained professional

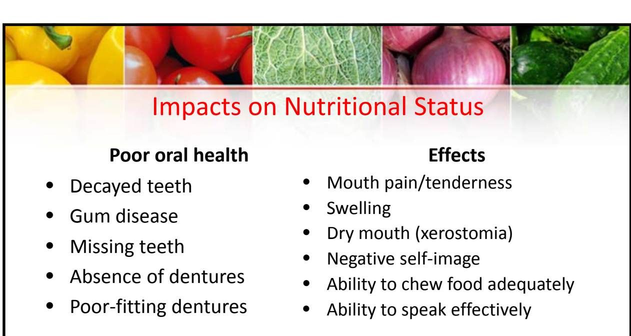

Physical Activity: Essential for Healthy Aging
2 hours and 30 minutes (150 minutes) of moderate-intensity aerobic activity (i.e., brisk walking) every week
AND
muscle-strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms)
OR
1 hour and 15 minutes (75 minutes) of vigorous-intensity aerobic activity (i.e., jogging or running) every week
AND
muscle-strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms)
https://www.cdc.gov/physicalactivity

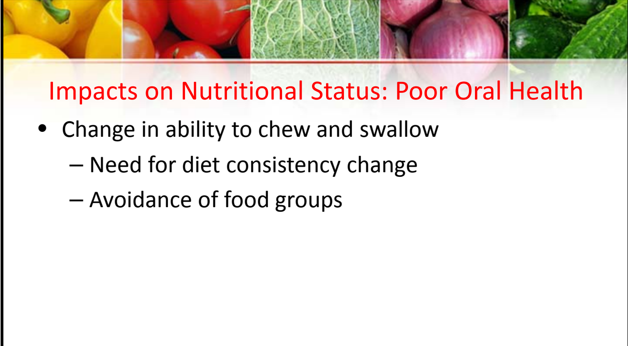

Impacts on Nutritional Status
Changes in body composition
2-3% loss of lean body mass per decade possible
Replaced by body fat
15-20% decrease in resting metabolic rate
Loss of skeletal muscle
Consequences
Decreased muscle strength/physical function
Decreased energy requirements
Increased risk of developing obesity-related chronic diseases

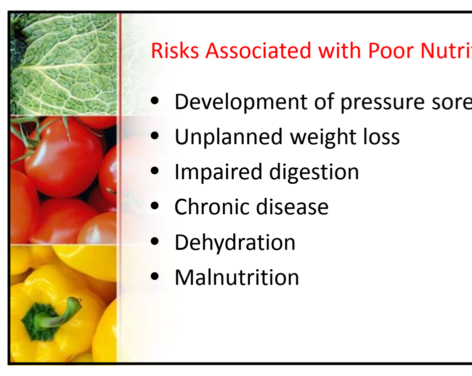

Impacts on Nutritional Status
Cognitive function
Vitamin and mineral deficiencies may adversely defect cognitive function
Decreased neurotransmitters
Dementia/Alzheimer's Disease
Depression

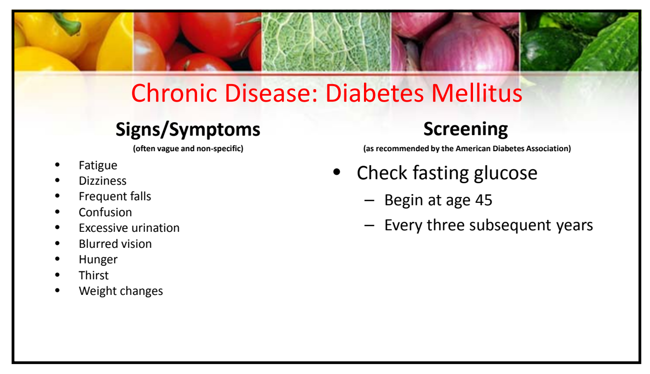

Impacts on Nutritional Status
Changes in taste and smell
Affect appetite and intake
Decreased desire to eat bland tasting food
Food becomes less enjoyable
Changes in sweet and salty sensations
Enhanced sour and bitter sensations
Vitamin and mineral deficiencies
B vitamins
Vitamin A
Zinc

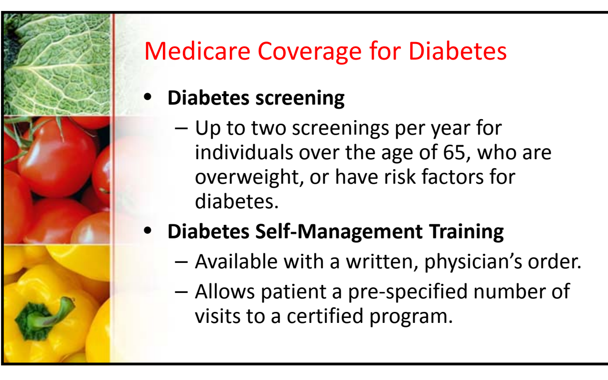

Impacts on Nutritional Status
Medication Use
May alter taste perception
May cause anorexia or stimulate appetite
May cause nutrient deficiencies
Food may affect drug absorption

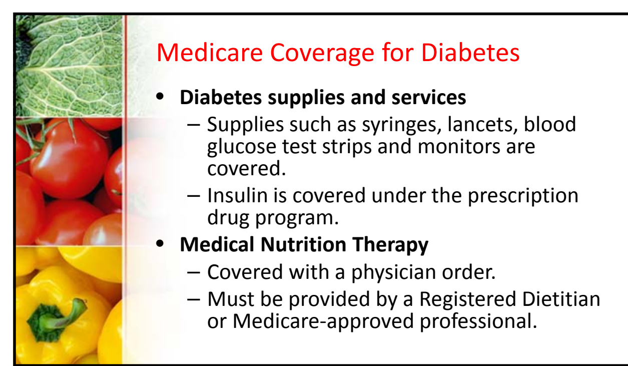

Impacts on Nutritional Status
Poor oral health
Decayed teeth
Gum disease
Missing teeth
Absence of dentures
Poor-fitting dentures
Effects
Mouth pain/tenderness
Swelling
Dry mouth (xerostomia)
Negative self-image
Ability to chew food adequately
Ability to speak effectively


Impacts on Nutritional Status: Poor Oral Health
Change in ability to chew and swallow
– Need for diet consistency change
– Avoidance of food groups


Risks Associated with Poor Nutritional Status
Development of pressure sores
Unplanned weight loss
Impaired digestion
Chronic disease
Dehydration
Malnutrition


Chronic Disease: Diabetes Mellitus
Signs/Symptoms
(often vague and non-specific)
Fatigue
Dizziness
Frequent falls
Confusion
Excessive urination
Blurred vision
Hunger
Thirst
Weight changes
Screening
(as recommended by the American Diabetes Association)
Check fasting glucose
– Begin at age 45
– Every three subsequent years


Medicare Coverage for Diabetes
Diabetes screening
– Up to two screenings per year for individuals over the age of 65, who are overweight, or have risk factors for diabetes.
Diabetes Self-Management Training
– Available with a written, physician's order.
– Allows patient a pre-specified number of visits to a certified program.


Medicare Coverage for Diabetes
Diabetes supplies and services
– Supplies such as syringes, lancets, blood glucose test strips and monitors are covered.
– Insulin is covered under the prescription drug program.
Medical Nutrition Therapy
– Covered with a physician order.
– Must be provided by a Registered Dietitian or Medicare-approved professional.

Medicare Coverage for Diabetes

- **Foot exams**
  - Covered for patients with diabetes-related peripheral neuropathy.
  - Therapeutic shoes and inserts are also covered for those with diabetes-related food conditions.

Medicare B: Medical Nutrition Therapy

Medical Nutrition Therapy (MNT) is defined as nutritional diagnosis, nutrition therapy and counseling provided by a Registered Dietitian.

- Physician referral is required
- May be provided only for:
  - Diabetes
  - Renal Disease
- Future coverage:
  - Obesity
  - Hyperlipidemia

Medicare B: Medical Nutrition Therapy

- Academy of Nutrition and Dietetics developed evidence-based nutrition practice guidelines/protocols
  - Recommended number of visits
    - Year one – 3 hours of individual counseling
    - Year two – 2 hours of individual counseling
    - Additional visits may be extended based on physician input

Medicare B: Medical Nutrition Therapy

- Coverage for conditions other than diabetes or end-stage kidney disease
  - "incident to medical care"
    - Service must be part of care already being provided at the time the patient is seen
  - Provided by an RD in physician practice or hospital

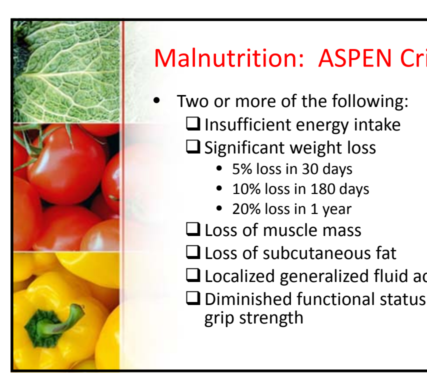
Dehydration

Potential causes:

- Medication use
  - Escalates with the number of meds
  - Prominent when using four or more
  - Diuretics/Laxative use and abuse
- Feeding difficulties
- Mental status
- Enteral/Parenteral feeding dependence
- Incontinence/Diarrhea/Vomiting
- Chronic infections

Malnutrition: Statistics

- 1:3 patients is malnourished
  - Up to 50% of hospitalized elderly patients
  - Up to 40% of nursing home patients
- Patients diagnosed with malnutrition have a 3 times longer length-of-stay
- Surgical patients with malnutrition have a 4 times higher risk of developing pressure ulcers
- Annual cost of disease-associated malnutrition in the U.S. is $156.7 billion



Malnutrition: ASPEN Criteria

- Two or more of the following:
  - ❑ Insufficient energy intake
  - ❑ Significant weight loss
    - 5% loss in 30 days
    - 10% loss in 180 days
    - 20% loss in 1 year
  - ❑ Loss of muscle mass
  - ❑ Loss of subcutaneous fat
  - ❑ Localized generalized fluid accumulations
  - ❑ Diminished functional status as measured by hand-grip strength

Malnutrition: Effect on Organ Function

- May cause loss of respiratory muscle mass
  - Includes atrophy of diaphragm
  - Decreased lung function
- May affect immune function
  - Increased risk for infections
- Associated with increased mortality

Malnutrition: Epidemic

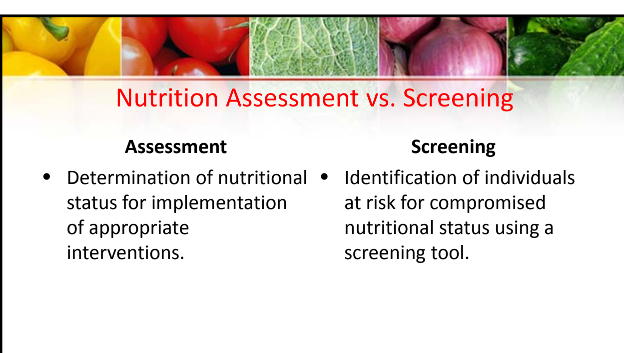
- Of the 30%-50% of malnourished hospitalized adults, only 7% are discharged with the diagnosis of malnutrition
  - The rest:
    - No dietary plan
    - Incomplete continuum of care
    - Increased likelihood of readmission

Malnutrition

Four Steps
to Improve Elderly Crisis

Screen
Assess
Diagnose
Intervene

- Decreases healthcare costs
- Improves patient outcomes
- Reduces readmissions
- Supports healthy aging
- Improves overall quality of healthcare



Nutrition Assessment vs. Screening

Assessment

- Determination of nutritional status for implementation of appropriate interventions.

Screening

- Identification of individuals at risk for compromised nutritional status using a screening tool.

Malnutrition Screening Tools

- Nutrition Screening Initiative (NSI)
- DETERMINE Checklist
- Malnutrition Screening Tool (MST)
- Mini Nutritional Assessment (MNA®)
- Malnutrition Universal Screening Tool (MUST)
- Nutrition Risk Screening (NRS-2002)
- Subjective Global Assessment (SGA)
- Seniors in the Community: Risk Evaluation for Eating and Nutrition (SCREEN)

Weight

- To ensure consistent measurements:
  - Without shoes
  - Light clothing
  - Same time of day (ideally in the morning before breakfast and after the bladder has been emptied)
  - Weigh to the nearest 0.1kg
  - If able to stand: use upright beam scale with moveable weights or digital scale
  - Unable to stand: use bed scale

Body Mass Index (BMI)

- Designated as an anthropometric tool specifically for evaluating patients 25-65 years of age
- Estimate of fat
- Does not account for fat distribution or muscle mass

- Nutrition Screening Initiative (NSI) uses BMI to document nutritional risk in elderly adults
  - Elderly individuals with BMIs greater than 27 or less than 24 are at risk of poor nutritional status
    - Below 24: possible correlation with a decline in functional status and an increase in mortality

Serum Albumin as a Nutritional Screening Tool

- Visceral protein produced by the liver
- Assessment of protein status
  - Cost effective
  - Not greatly affected by aging
    - Small decline in rate of synthesis by liver
  - Less than 3.5g/dL may be indicative of protein-calorie malnutrition
    - Further investigation is warranted
  - Less than 3.0g/dL associated with increased mortality
    - Study of Medicare patients showed low serum albumin coupled with weight loss positively correlated with higher rates of rehospitalization

Serum Albumin as a Nutritional Screening Tool

- Caution!
  - Affected by many factors
    - Dehydration
    - Overhydration
    - Liver disease
    - Infection
    - Immobility
      - due to decreased nitrogen balance
  - Long half-life
    - Tests will not show immediate response to nutrition intervention

Screening Tool: Nutrition Screening Initiative (NSI)

Level One

- Used after the initial tool identifies individuals who require further nutritional assessment
- Based on:
  - BMI
  - Dietary habit evaluation
  - Living situation
  - Functional Status
- For use by various types of caregivers
- Can determine need for further medical, social service, or nutritional interventions

Level Two

- Must be completed by specially trained provider
- Involves:
  - Anthropometric assessment
  - Laboratory tests
  - Full evaluation of medication use
  - Assessment of:
    - Social/living situation
    - Eating habits
    - Neurological status
    - Functional status
  - Additional screenings (various clinical settings)
    - Oral health
    - Drug-nutrient interaction

Screening Tools: DETERMINE Checklist

The acronym “DETERMINE” is the basis for the nutritional checklist, which identifies warning signs for nutrition problems.

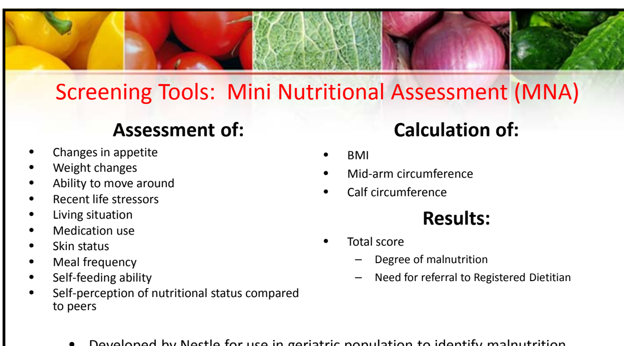
- **D**isease
- **E**ating poorly
- **T**ooth loss/mouth pain
- **E**conomic hardship
- **R**educed social contact
- **M**ultiple medicines
- **I**nvoluntary weight loss or gain
- **N**eeds assistance with self-care
- **E**lder years – above age 80

Screening Tools: DETERMINE Checklist

- Consists of 10 questions:
  - Impact of illness on
    - Eating
    - Fruit, vegetable, and dairy intake
    - Alcohol consumed
    - Social and financial situation
    - Condition of teeth
    - Medication use
    - Weight changes

Screening Tool: Malnutrition Screening Tool (MST)

- Patient population
  - Inpatients
  - Outpatients
  - Residential aged care facilities
- Nutrition screening parameters
  - Recent weight loss
  - Recent poor intake
- Completed within 24 hours of admission and then weekly
- Results
  - Risk of malnutrition
  - Patients at high risk had longer length of stay



Screening Tools: Mini Nutritional Assessment (MNA)

Assessment of:

- Changes in appetite
- Weight changes
- Ability to move around
- Recent life stressors
- Living situation
- Medication use
- Skin status
- Meal frequency
- Self-feeding ability
- Self-perception of nutritional status compared to peers

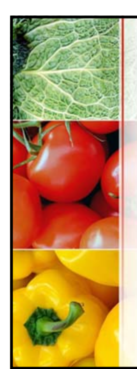
Calculation of:

- BMI
- Mid-arm circumference
- Calf circumference

Results:

- Total score
  - Degree of malnutrition
  - Need for referral to Registered Dietitian

- Developed by Nestle for use in geriatric population to identify malnutrition



Screening Tools: MUST

- Patient population:
  - acute-care and community settings
- Nutrition screening parameters
  - BMI
  - % weight loss
  - Acute disease effect
- Results
  - Mortality risk
  - Length of stay
  - Discharge destination in acute-care patients

Screening Tools: Subjective Global Assessment

- Setting
  - Acute-care
  - Rehab
  - Community
  - Residential Aged Care
- Nutritional assessment parameters
  - Medical history
    - Weight, intake, GI symptoms, functional capacity
  - Physical examination
- Results
  - SGA A (well nourished)
  - SGA B (mild-moderate malnutrition)
  - SGA C (severe malnutrition)
- Requires training
- Easy to administer

Barriers to Nutritional Assessment

- Obstacles for proper assessment
  - Skewed self-reporting due to memory loss/cognitive impairment
  - Physical impairments
    - Impedes ability to read, write or answer questions
  - Visual impairments
    - affecting one's ability to measure portion sizes
  - Data gathering by caregivers

Malnutrition: Clinical Signs

- Weight loss
- Cholesterol levels <160mg/dL
- Temporal wasting
- Loss of subcutaneous fat
- Poor wound healing

Nutrition-Focused Physical Examination

- Performed by Registered Dietitian (RD)
- Identifies:
  - Possible nutrient deficiencies
  - Hydration status
  - Presence of muscle/temporal wasting
  - Changes in musculo-skeletal status
  - Skin condition
  - Signs of malnutrition
  - Swallowing status
  - Adverse effects to nutrition status

Food Insecurity

Factors

- Fixed income
- Lack of availability of fresh produce and meats
- Living situation
- Education level
- Transportation issues
- Lack of confidence or motivation
- Literacy levels
- Cultural factors
- Fear or resistance to technology

Effects

- May inappropriately substitute foods higher in calories, fat or carbohydrates

Example scenario:

- ✓ Lives in own home
- ✓ Assistance required

Options include:

- Home-delivered meals
- Congregate meals
- Dining out
- Assistance with home health aide

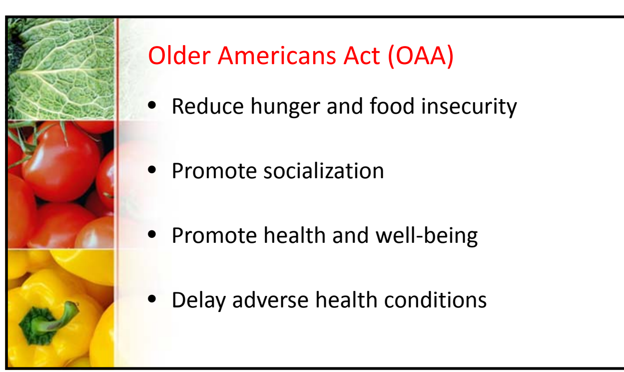
Example scenario:

- ✓ Unable to live at home
- ✓ Assistance required

Options include:

- Retirement homes
- Assisted-living facilities
- Skilled-care facilities

*depends on financial resources



Older Americans Act (OAA)

- Reduce hunger and food insecurity
- Promote socialization
- Promote health and well-being
- Delay adverse health conditions

Nutrition Programs

Provide access to:
- Healthy meals
- Nutrition education
- Nutrition counseling

Funded by
- State and local governments
- Foundations
- Fundraising
- Voluntary contributions

Nutrition Programs: Target

Adults, age 60 and older
- Low income
- Minorities
- Rural communities
- Limited English Proficiency
- At risk of institutional care

Nutrition Quality Standards (OAA)

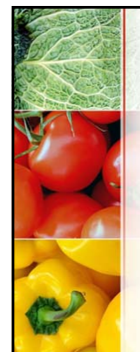
All meals must:
- Adhere to the current dietary guidelines
- Provide a minimum of 1/3 of the DRIs
- Meet food safety and sanitation requirements
- Appeal to older adults

Congregate Nutrition Services

- Under the Elderly Nutrition Program (ENP)
- Prevent the need for costly medical interventions
- Contributes to health and well-being
  - Social engagement
  - Healthy aging education
  - Volunteer opportunities
- Serves ages 60 and older
  - Additionally caregivers, spouses and/or persons with disabilities

Home-Delivered Nutrition Services

- Under the Elderly Nutrition Program (ENP)
- Target:
  - Homebound/isolated older individuals
  - Caregivers, spouses and/or persons with disabilities
- Provides:
  - Wholesome meal
  - Safety check
  - Socialization
- Meals on Wheels America



Meals on Wheels

- Home-delivered hot, cold, or frozen meals
- For homebound seniors, individuals with disabilities, or those recuperating from hospital stays
- Eligibility
  - Determined by case manager on visit
- Sign-up
  - Call local MOW office
  - Online forms
- How Much Does it Cost?
  - Varies, depending on financial circumstances
  - Funding sources available to those in need
  - Financial Assistance is available to eligible clients who need assistance

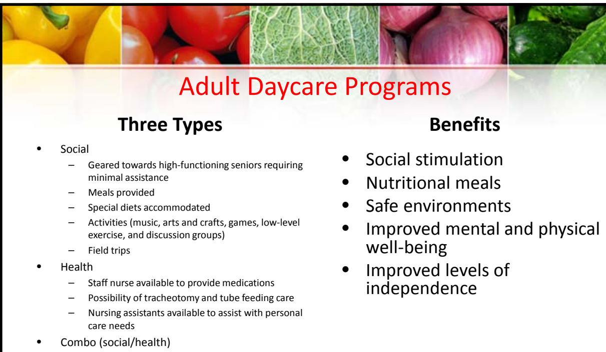
Meals on Wheels (Northampton Co.)

www.mealsonwheelspa.org

- Chef's Pack Program
  - Choice of 17 frozen entrees and 2 soups
    - Can be ordered by clients, those recuperating from hospital stays, and active older adults who want to eat healthier
- Group Dining Services
  - Catered congregate meals for adult day centers, senior centers, child care centers and other Meals on Wheels programs
- Ani-Meals
  - Distribution of donated pet food for home-delivered meal client's cats, dogs, birds, and fish
- Grocery Shopping
  - Shopping for and delivering groceries to homebound seniors and individuals with disabilities that are unable to shop for themselves

Child and Adult Care Food Program

- Provides aid to adult institutions
  - Adult Day Care Centers
  - Emergency Shelters
- Must meet specific meal patterns and portion sizes



Adult Daycare Programs

Three Types

- Social
  - Geared towards high-functioning seniors requiring minimal assistance
  - Meals provided
  - Special diets accommodated
  - Activities (music, arts and crafts, games, low-level exercise, and discussion groups)
  - Field trips
- Health
  - Staff nurse available to provide medications
  - Possibility of tracheotomy and tube feeding care
  - Nursing assistants available to assist with personal care needs
- Combo (social/health)

Benefits

- Social stimulation
- Nutritional meals
- Safe environments
- Improved mental and physical well-being
- Improved levels of independence

Commodity Supplemental Food Program

- To improve the health of low-income elderly persons at least 60yo
- Supplements diets with nutritious USDA Foods
- Eligibility
  - Income-based/Household size
    - 1 - $15,678 annually
    - 2 - $21,112 annually
    - 3 - $26,546 annually
    - 4 - $31,980 annually
- To apply: Contact State Distributing Agent
  - Joseph Quattrochi, Director, Bureau of Food Distribution

    Tel: (717) 787-2940

    Fax: (717) 787-2387

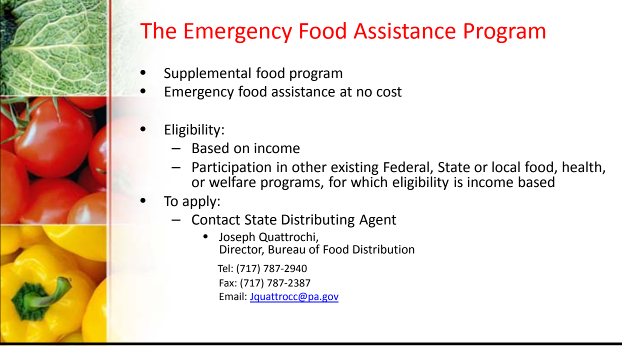
    Email: Jquattrocc@pa.gov

Supplemental Nutrition Assistance Program (SNAP)

- Previously the federal Food Stamp Program
- Helps low-income individuals/families
  - Grocery stores and other retailers that sell food
  - Senior centers
  - Meal delivery services
- EBT card – refilled monthly
- https://www.benefitscheckup.org

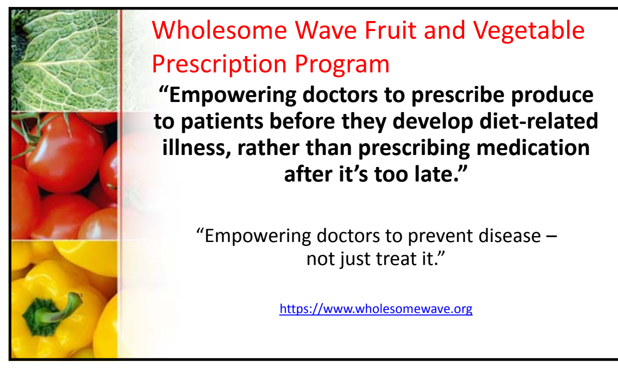
SNAP Challenges

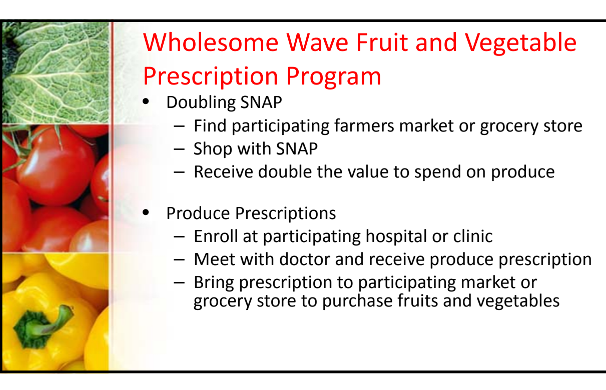
- Participation rates are low among elderly
- Reluctance due to stigma
- Application process
- Use of EBT cards

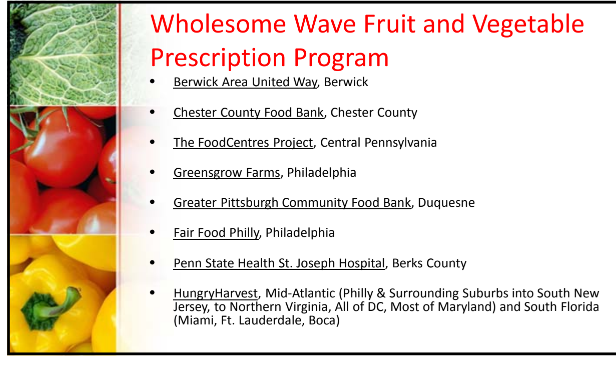


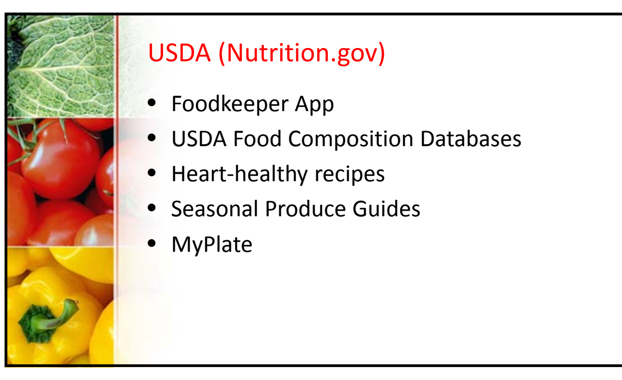
Academy of Nutrition and Dietetics

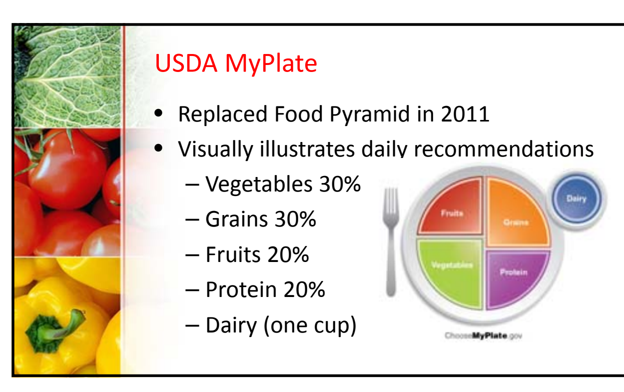
- www.eatright.org
  - Find a Registered Dietitian
  - Nutrition tip sheets
  - Good Nutrition Reading List
- www.eatrightpa.org
  - Pennsylvania affiliate
  - Links to district affiliates

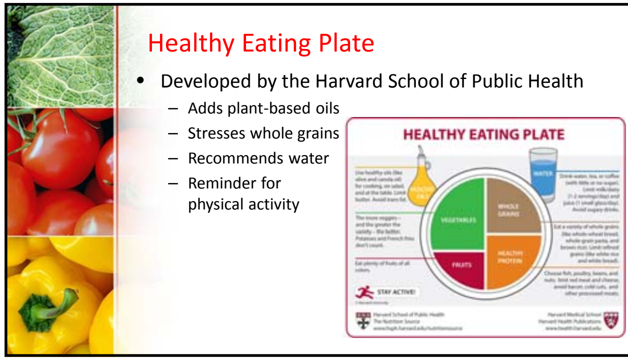


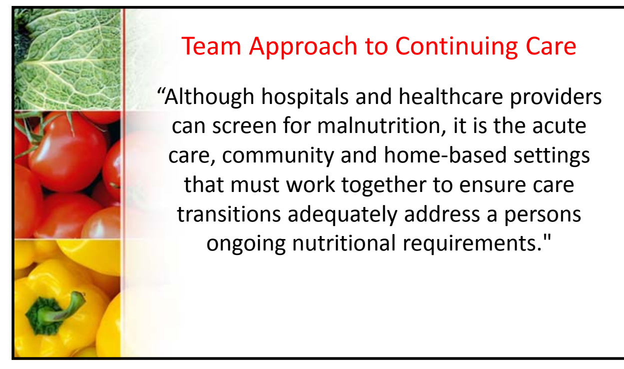

Wholesome Wave Fruit and Vegetable Prescription Program
• Doubling SNAP
– Find participating farmers market or grocery store
– Shop with SNAP
– Receive double the value to spend on produce
• Produce Prescriptions
– Enroll at participating hospital or clinic
– Meet with doctor and receive produce prescription
– Bring prescription to participating market or grocery store to purchase fruits and vegetables


Wholesome Wave Fruit and Vegetable Prescription Program
• Berwick Area United Way, Berwick
• Chester County Food Bank, Chester County
• The FoodCentres Project, Central Pennsylvania
• Greensgrow Farms, Philadelphia
• Greater Pittsburgh Community Food Bank, Duquesne
• Fair Food Philly, Philadelphia
• Penn State Health St. Joseph Hospital, Berks County
• HungryHarvest, Mid-Atlantic (Philly & Surrounding Suburbs into South New Jersey, to Northern Virginia, All of DC, Most of Maryland) and South Florida (Miami, Ft. Lauderdale, Boca)


USDA (Nutrition.gov)
• Foodkeeper App
• USDA Food Composition Databases
• Heart-healthy recipes
• Seasonal Produce Guides
• MyPlate


USDA MyPlate
• Replaced Food Pyramid in 2011
• Visually illustrates daily recommendations
– Vegetables 30%
– Grains 30%
– Fruits 20%
– Protein 20%
– Dairy (one cup)
Fruits
Grains
Vegetables
Protein
Dairy
ChooseMyPlate.gov


Healthy Eating Plate
• Developed by the Harvard School of Public Health
– Adds plant-based oils
– Stresses whole grains
– Recommends water
– Reminder for physical activity
HEALTHY EATING PLATE
WATER
VEGETABLES
WHOLE GRAINS
FRUITS
HEALTHY PROTEIN
STAY ACTIVE!


Team Approach to Continuing Care
“Although hospitals and healthcare providers can screen for malnutrition, it is the acute care, community and home-based settings that must work together to ensure care transitions adequately address a persons ongoing nutritional requirements."

Outcomes of Nutrition Intervention

- Increased knowledge
- Behavior-related changes
- Improved nutritional status
- Changes in laboratory values
- Changes in clinical condition/improved overall status
  - Blood pressure
  - Blood glucose control
  - Weight
  - Reduction of risk factors
  - Reduction in symptoms
- Improved quality of life
- Improved ability to care for oneself or be self-sufficient
- Decrease in medication use
- Reduction of healthcare costs
- Fewer hospital admissions or delayed admission to skilled nursing facility

References

- https://www.nutrition.gov/subject/food-assistance-programs/food-distribution-programs
- Administration for Community Living https://www.acl.gov/node/423
- National Council on Aging – Malnutrition Screening and Assessment Tools https://www.ncoa.org/center-for-healthy-aging/resourcehub/assesssments-tools/malnutrition-screening-assessment-tools/
- National Council on Aging https://www.ncoa.org/center-for-healthy-aging/resourcehub/assesssments-tools/malnutrition-screening-assessment-tools/
- Meals on Wheels of Northampton County http://www.mealsonwheelspa.org/
- **Validated Malnutrition Screening and Assessment Tools: Comparison Guide** consensus document from Dietitian/ Nutritionists from the Nutrition Education Materials Online, "NEMO", team http://www.health.qld.gov.au/masters/copyright.asp