

# Normal Nutrition and Diet Therapy

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# Key Concepts

- Optimal personal and community nutrition is a major component of health promotion
- Certain nutrients in food are essential to our health and well being
- Food and nutrient guides help us to plan a balanced diet according to individual needs and goals

# Nutrition and Dietetics

- Nutrition
  - Food people eat and how we use it
- Nutritional Science
  - Scientific knowledge on human's food requirements
- Dietetics
  - Health professional responsible for applying nutritional science to promote human health and treat disease

# Nutrition and Dietetics

- Registered Dietitian (RD)
  - Nutrition authority on the health care team
  - Also referred to as clinical nutrition specialist or public health nutritionist

# Wellness Movement and National Health Goals

- Response to medical care system's focus on illness and disease
- Response to rising health costs
- Focuses on lifestyle and personal choices

# Traditional and Preventive Approaches to Health

- Traditional
  - Attempts change only when illness or disease already exist
  - Little value for lifelong positive health
- Preventive
  - Identify risk factors
  - Allows people to choose behaviors to minimize risk of disease

- Food is necessary for life
- People only interested in satisfying hunger not whether it has the components of a good nutrition

# Signs of Good Nutrition

- Well-developed body
- Ideal weight for body composition
- Good muscle development
- Smooth skin, glossy hair, clear and bright eyes
- Mental and physical alertness
- Ability to resist disease
- Increased life span

# Functions of Nutrients in Food

- Provide energy
- Build Tissue
- Regulate metabolic processes
- Individual nutrients have many special metabolic functions
- No nutrient ever works alone

# Energy Sources

- Carbohydrates
  - Primary source of fuel for heat and energy 4kcal/gram
  - Maintain body's back-up source of quick energy
    - energy is measured in kilocalories
  - Should provide 45%-65% of total kilocalories

- Carbohydrates
  - Starches and sugars
- Glycogen- energy stored in muscle tissue
  - Animal starch
  - Body's back up store of energy

# Energy Sources

- Fats
  - Animal and plant sources
  - Secondary (storage) form of heat and energy 9 kcal/gram
  - Should provide no more than 20%-35% of total kilocalories

# Energy Sources

- Proteins
  - Source of energy when supply from carbohydrates and fats is insufficient
  - Primary function is tissue building
  - Should provide 10%-35% of total kilocalories
  - 4kcal/gram

# Tissue Building

- Proteins
  - Made up of amino acids
    - Necessary for building and repairing tissues
- Vitamins and minerals
  - Vitamin C for tissue building
  - Calcium and phosphorus
    - Building and maintaining bone

# Tissue Building

- Iron
  - Building hemoglobin in the blood
  - Responsible for carrying oxygen
- Fatty acids
  - Build central fat substance of cell walls

# Regulation and Control

- Vitamins
  - Function as coenzyme factors
  - Components of cell enzymes in governing chemical reaction during cell metabolism
- Minerals
  - Also serve as coenzyme factors

# Regulation and Control

- Other nutrients
  - Water
    - Essential base for all metabolic processes
  - Fiber
    - Regulates passage of food material through GI tract

# 6 Major Nutrients

- Carbohydrates
- Fats
- Proteins
- Vitamins
- Mineral
- Water

# Types of Nutrition

- Optimal nutrition
  - Obtained from a varied diet
  - Desired amounts should come from a balanced diet
- Under nutrition
  - Less than desired amounts of nutrients
  - Limits work capacity, immune system, mental activity

# Types of Nutrition

- Malnutrition
  - Reserves depleted
  - Nutrient and energy intake insufficient
- Over nutrition
  - Excess nutrient and energy intake over time
  - Produces harmful gross body weight
  - Excessive amounts of nutrient supplements over time

# Nutrient Standards

- Published by the National Academy of Sciences
- Updated every 5-10 years
- Includes recommendations for each gender and age group

# Definitions

- Dietary reference intakes (DRI)
  - Serve as a reference for intake levels of the essential nutrients to meet the nutritional needs of most healthy population groups
- Recommended dietary allowances (RDA)
  - Minimum amt. of nutrients to protect the person from a nutrient deficiency

# Food Guides

- Food and nutrient guides help us to plan a balanced diet according to individual needs and goals.

# Food Guide Pyramid

- Simple practical education tool
- Basis for general meal planning and food intake pattern
- Promotes carbohydrates while limiting fat intake
- Daily food-group choices may be spread over three or more meals

# Food Guide Pyramid

- This subject is addressed:
  - On the video shown in class

# MyPyramid

- Released in early 2005
- Goal of this food guide is to promote physical activity, variety and portionality, moderation and gradual improvements
- Personalize own plan on website
  - [www.mypyramid.gov](http://www.mypyramid.gov)

- The MyPyramid food guidance system provides recommendations specific to age, gender, height, weight and physical activity
- Once inputted into the computer the system will produce a plan with recommendations for each food group

# Dietary Guidelines

- Promote 3 basic goals
  - Aim for fitness
  - Build a healthy base
  - Chose sensibly
- Other organizations have their own dietary guidelines
  - American Cancer Society
  - American Heart Association

- Changing Food Environment
  - Changing rapidly
  - More processed foods
  - Some food habits deteriorating
  - Increasing signs of malnutrition
  - Customers asking for more

# Chapter 2

- Carbohydrates

# Key Concepts

- Carbohydrate foods provide practical energy (calorie) sources because of their availability, relatively low cost, and storage capacity.
- Carbohydrate structures vary from simple to complex, so they can provide both quick and extended energy for the body

# Importance of Carbohydrates

- Basic fuel source
- Widely available and easily grown
- Relatively low in cost
- Easily stored

# Classes of Carbohydrates

- Simple and complex Carbohydrates
  - Simple= monosaccharides and disaccharides
  - Complex = polysaccharides
- Monosaccharides
  - Glucose- simple sugar Dextrose
  - Fructose
  - Galactose

# Classes of Carbohydrates

- Disaccharides= double sugars composed of two simple sugars
  - Sucrose= glucose + fructose
  - Lactose= glucose + galactose
  - Maltose= glucose + glucose

# Classes of Carbohydrates

- Polysaccharides= complex carbohydrates
  - Starch – most significant polysaccharide in the body
  - Glycogen- found in animal muscle tissue also called animal starch

# Key Concepts

- Dietary fiber, an indigestible carbohydrate, serves separately as a body regulatory agent.
- Carbohydrate foods provide practical energy (calorie) sources because of their availability, relatively low cost, and storage capacity.

# Dietary Fiber

- Not digestible
- Important in health promotion and disease prevention
- Broken down into soluble and insoluble
- Cellulose p. 17
  - Remains undigested in the GI tract and provides bulk to a diet
  - Bulk helps move the food mass through the intestine

# Dietary Fiber

- Divided into groups based on solubility
  - P. 17 Box 2-1
- Dietary fiber provided in whole grains, legumes, vegetables, fruits
- Many health organizations recommend increasing intake of dietary fibers

# Dietary Fiber

- Sudden increases can result in gas, bloating, constipation
- Excessive amounts of dietary fiber can trap small amounts of minerals and prevent absorption into GI tract

# Other Sweeteners

- Nutritive sweeteners
  - Sugar alcohols (sorbitol, mannitol, xylitol) used as a sugar replacement
- Nonnutritive sweeteners
  - Artificial sweeteners in food

# Energy Function of Carbohydrates

- Basic fuel supply
  - Energy for physical activities and all work of body cells
- Reserve fuel supply
  - Provided by glycogen
  - Maintains normal blood glucose level

# Special Tissue Functions of Carbohydrates

- Liver
  - Glycogen reserves protect cells from depressed metabolic function
- Protein and fat
  - Carbohydrates regulate protein and fat metabolism.

# Food Sources of Carbohydrates

- Starches
  - Provide fundamental complex carbohydrates
- Sugars
  - High-sugar diets carry health risks

# Digestion of Carbohydrates

- Mouth
  - Mechanical or muscle functions break food mass into smaller particles
- Stomach
  - Peristalsis continues mechanical digestive process

# Digestion of Carbohydrates

- Small intestine
  - Peristalsis continues mechanical digestions
  - Pancreatic secretions
    - Pancreatic amylase
  - Intestinal secretions
    - Sucras, lactase, and maltase

# Lactose intolerance

- Inability to break lactose down into smaller monosaccharides (glucose and galactose )
- Signs and symptoms
  - Bloating, gas, abdominal pain, and diarrhea
- Effects 75% of adults world wide and is much higher in certain countries and ethnic groups

# Chapter 3

- Fats

# Key Concepts

- Dietary fat supplies essential body tissue needs, both as an energy fuel and a structural material.
- Foods from animal and plant sources supply distinct forms of fat that affect health in different ways.
- Excess dietary fat, especially from animal food sources, is a health risk factor.

# The Nature of Fats

- Dietary importance
  - Concentrated fuel for energy
- Classes of fats
  - Lipids
  - Triglycerides
  - Fatty acids
  - Lipoproteins

- Definitions of classes of fats
  - Chapter 3 p. 31

# Fatty Acids

- Saturated fatty acids
  - Filled with hydrogen
- Unsaturated fatty acids
  - Not completely filled with hydrogen
  - Less heavy, less dense
  - Monounsaturated: One unfilled spot
  - Polyunsaturated: Two or more unfilled spots

- Essential Fatty Acid

- A nutrient is essential if one of the two is true

- 1. Its absence will create a deficiency disease

- 2. The body cannot manufacture it in sufficient amounts and it must be obtained from the diet.

- Lipoproteins
  - HDL- good cholesterol
  - LDL- bad cholesterol

# Cholesterol

- Not a fat (belongs to group sterols)
- A fat-related compound
  - From animal foods
  - Egg yolks
  - Liver, kidney
  - Meats
- Synthesized in the liver
- Diet should be low in cholesterol
- Linked with heart disease

# Functions of Fat in Foods

- Fat in foods provide:
- Energy Essential nutrients
- Flavor and satisfaction
- Carry fat soluble vitamins

- Fat substitutes
  - Being trialed
  - Not absorbed therefore contribute little or not calories
    - Substances on the market
      - Simplesse
      - Olestra

# Functions of Fat in the Body

- Adipose tissue
  - Protects organs
  - Helps regulate temperature
- Cell membrane structure
  - Forms part of cell wall
  - Helps transport nutrients across cell membranes

# Food Sources of Fat

- Animal fats
- Plant fats
- Hydrogenated fats
  - Commercial fat products raise health concerns
  - Food industry now offers trans-free products

# Food Label Information

- Calories from fat
- Calories from saturated fat\*
- Total fat
- Saturated fat
- Polyunsaturated fat\*
- Monounsaturated fat\*
- Cholesterol
  - (\*voluntary information)

# Dietary Fat and Health

- The American diet is high in fat.
- Excess calories are stored as fat.
- Animal food sources contribute to excess cholesterol and saturated fat in the diet.
- A decrease in saturated fat reduces serum total cholesterol.
- Monounsaturated fats (olive oil) reduce LDL cholesterol when substituted for saturated fat.

- Visible fat
  - Include butter, margarine salad oil and dressings and the visible fat on meat
- Invisible fat
  - Include cheese, cream portion of homogenized milk, egg yolk, nuts, seeds, olives, avocados and lean meats

# Dietary Fat Requirements

- Healthy diet guidelines:
- Stress the health benefits of a diet low in fat, saturated fat, and cholesterol.
- Recommend that the fat content should not exceed 20 to 35 percent of total kcalories
  - Less than 10 % of kcalories should be from saturated fat
  - Dietary cholesterol be limited to 300 mg/day

# Dietary Guidelines for Americans

- Control saturated fat and cholesterol
- Use only lean cuts of all meats; use more poultry and seafood
- Limit eggs to two or three per week
- Use low-fat or fat-free milk and milk products
- Avoid adding too much fat in food preparation

- Visible Fat

- Invisible Fat

# Digestion of Fats

- Mouth
- Stomach
- Small intestine
  - Bile from the gallbladder
  - Enzymes from the pancreas
  - Enzyme from the small intestine
  - Absorption

# Chapter 4

- Proteins

# Key Concepts

- Food proteins provide the amino acids necessary for building and maintaining body tissue.
- Protein balance, both within the body and in the diet, is essential to life and health.
- The quality of protein food, and its ability to meet the body's needs, is determined by the composition of amino acids.

# Amino Acids: Basic Building Material

- Each protein is made up of hundreds of amino acids
- Amino acids form unique chain sequences to form specific proteins
- When protein foods are eaten, proteins are broken down into amino acids
- Amino acids are reassembled in the body to form a variety of proteins

# Classes of Amino Acids

- Indispensable amino acids
  - Body cannot manufacture
- Dispensable amino acids
  - Body can synthesize
- Conditionally indispensable amino acids
  - Normally synthesized but some health conditions may require dietary intake

# Functions of Protein

- Tissue building
- Energy
- Water Balance
- Metabolism
- Body defense system

# Food Sources of Protein

- Complete proteins
  - Meat, cheese, poultry and fish
  - Soy and soy products
- Incomplete proteins
  - Plant-origin foods
    - Grains
    - Legumes
    - Nuts
    - Seeds
    - Fruits and vegetables

# Vegetarian Diets

- Must combine foods to cover all amino acid needs
- Types of vegetarian diets
  - Lacto-ovo vegetarian
  - Lacto-vegetarian
  - Ovo-vegetarian
  - Vegan

# Health Benefits and Risks

- Lower dietary fat and cholesterol
- Lower rates of death from cardiovascular disease
- Lower rates of obesity
- Lower risk of diabetes
- Lower risk of renal disease
- Lower risk of dementia

# Digestion of Proteins

- Mouth
- Stomach: enzymatic breakdown of protein by proenzymes (zymogens)
  - Pepsin
  - Hydrochloric acid
  - Rennin
- Small intestine
  - Pancreatic secretions
  - Intestinal secretions

# Body Needs for Protein

- Tissue growth
- Dietary protein quality has been determined by:
  - Chemical score (CS)
  - Biological value (BV)
  - Net protein utilization (NPU)
  - Protein efficiency ratio (PER)
- Additional needs due to disease

# Dietary Deficiency of Excess

- Protein-energy malnutrition
  - Kwashiorkor
  - Marasmus
- Excess protein
  - Usually means excess fat intake also
  - Protein displaces other healthy foods in diet
  - Kidneys stressed
  - Potential calcium loss

# Chapter 5

- Primarily discussed in A & P.

# Chapter 6

- Energy Balance

# Key Concepts

- The body uses most of its energy intake for basal metabolic work needs.
- Food energy is changed into body energy and cycled throughout the body to do work.

# Basic Energy Needs

- The body needs constant energy for voluntary and involuntary activity
- Voluntary work and exercise
  - Includes all physical actions related to usual activities and additional physical exercise

# Basic Energy Needs

- Involuntary work: Includes all activities of the body that are not consciously performed
- Circulation, respiration, digestion, other internal activities
- Requirements Include:
  - Chemical energy: in many metabolic products
  - Electrical energy: in brain and nerve activities
  - Mechanical energy: in muscle contraction
  - Thermal energy: to keep the body warm

# Basic Energy Needs

- Fuel is provided in the form of nutrients
- Three energy nutrients
  - Carbohydrate is primary fuel
  - Fat assists as storage fuel
  - Protein is a back-up fuel source
- If sufficient carbohydrate is not consumed to meet energy needs, the body burns fat

# Measurement OF Energy

- Calorie: Amount of energy in food or expended in physical actions (common usage)
- Kilocalorie (1000 calories): Amount of heat necessary to raise 1 kg of water 1 degree Centigrade

# Fuel Factors

- Carbohydrate: 4 kcal/g
- Fat: 9 kcal/g
- Protein: 4 kcal/g
- Alcohol: 7 kcal/g

# Key Concepts

- A balance between intake of food energy and output of body-work energy maintains life and health.
- States of being underweight and overweight reflect degrees of body energy imbalance.

# Energy Balance

- Two energy systems support human life
- External energy cycle: plants transform the sun's radiation into stored chemical energy.
- Internal energy cycle: humans eat plant and animal foods

# Energy Intake

- The body's energy balance depends on energy intake in relation to energy output
- Energy intake
  - Three energy nutrients in food
  - Energy intake is the calculated energy value of actual food consumption

# Sources of Stored Energy

- Glycogen
- Adipose Tissue
- Muscle Mass

# Energy Output

- Activities to sustain life require energy from food and body reserves
- Three demands for energy determine the body's total energy requirements
- Resting energy expenditure (REE)
- Physical activity
- Thermic effect of food

# Energy Requirements

- Depend on:
  - Basal metabolic Rate
    - Resting metabolic rate
  - Food Intake
    - Thermic effect of food
  - Physical Activity
    - Exercise, mental
    - Mental concentration
    - Emotional states

# Energy Expenditure

- Overweight
- Energy Imbalance
- Excess input over output
  
- Thermogenesis – fidgeting like activity

# Health and Body Weight

- Ideal Body Weight (healthy)
- Body Mass Index

# Body Composition

- Body weight vs Body fat
  - Obesity
  - 20 lbs or more over so called standard weight
  - Metropolitan Life Insurance Co.
  - Updated in 1983
  - Indicates body weight should not increase beyond age 20-30

# Factors that influence Body Composition

- Gender
- Age
- Physical exercise
- Race
- Climate

# Key Concept

- Vitamins are noncaloric essential nutrients that are necessary in very small amounts for specific metabolic control and disease prevention.

# Vitamins

- Dietary reference intakes (DRI)
- Nature of vitamins
  - Discovery
  - Definition
  - Classes of vitamins

# Vitamins

- Functions of vitamins
  - Metabolic control agent: coenzyme partner
  - Tissue structure
  - Prevention of deficiency diseases
- Vitamin metabolism
  - Fat-soluble vitamins (A,D,E, and K)
  - Water-soluble vitamins (C and B complex)

# Vitamins

- Fat-soluble vitamins
- Water-Soluble vitamins

# Key Concepts

- Certain health problems are related to inadequate or excessive vitamin intake.
- Vitamins occur in a wide variety of foods that are packaged with the energy- and tissue-building macronutrients (e.g., carbohydrates, fat, and protein) on which vitamins work as specific catalysts to regulate body metabolism.

# Fat-Soluble Vitamins Vitamin A (Retinol)

- Functions
  - Vision
  - Tissue strength and immunity
  - Growth
- Requirements
  - Food form and units of measure
  - Body storage
- Deficiency disease
  - – xerosis and xerophthalmia
- Toxicity symptoms- hypervitaminosis
- Food sources
- Stability

# Vitamin D (Cholecalciferol)

- Functions
  - Absorption of calcium and phosphorus
  - Bone mineralization
- Requirements
- Deficiency disease- rickets
- Toxicity symptoms
- Food sources
- Stability

# Vitamin E (Tocopherol)

- Functions
  - Antioxidant function
  - Relation to selenium metabolism
- Requirements
- Deficiency disease p. 94
- Toxicity symptoms
- Food sources
- Stability

# Vitamin K

- Functions
  - Blood clotting
  - Bone development
- Requirements
- Deficiency diseases
- Toxicity symptoms
- Food sources
- Stability

# Water-Soluble Vitamins

## Vitamin C (Ascorbic Acid)

- Functions
  - Connective tissue
  - General body metabolism
  - Antioxidant function
- Requirements
- Deficiency disease- scurvy
- Toxicity symptoms
- Food sources
- Stability

# Thiamin (Vitamin B1)

- Functions
  - Gastrointestinal system
  - Nervous system
  - Cardiovascular system
- Requirements
- Deficiency disease- beriberi
- Toxicity symptoms
- Food sources
- Stability

# Cobalamin (Vitamin B12)

- Deficiency – pernicious anemia
- Other general symptoms
  - Nervous disorders
  - Sore mouth and tongue
  - Amenorrhea
  - neuritis

# Riboflavin (Vitamin B2)

- Deficiency
  - Cracked lips
  - Swollen red tongue
  - Eyes burning
  - Dermatitis
  - Itching or tearing from extra blood vessels in the cornea

# Niacin (Vitamin B3)

- Deficiency
  - Pellagra
  - Characterized by 4D's
    - Dermatitis
    - Diarrhea
    - Demetia
    - Death

# Vitamin B6

- Deficiency
  - Unlikely but can result in
  - Abnormal central nervous system function
  - Hyperirritability
  - Neuritis
  - Possible convulsions
  - Microcytic hypochromic anemia

# Folate

- Deficiency- megaloblastic anemia
- Reference pregnant teenagers and possible problems

- Biotin
  - Def. only in patients on long term TPN
- Choline
  - Def. only assoc. with liver damage
- Pantothenic Acid
  - Def. unlikely

# Chapter 8

- Minerals

# Key Concepts

- The human body requires a variety of minerals in different amounts to perform numerous metabolic tasks.

# The Nature of Body Minerals

- Classes of body minerals
  - Major minerals
  - Trace elements
- Functions of minerals
- Mineral metabolism
  - Digestion
  - Absorption
  - Transport

# Key Concepts

- A mixed diet of varied foods and adequate energy value is the best source of the minerals necessary for health.
- Of the total amount of minerals a person consumes, only a relatively limited amount is available to the body.

# Major Minerals

- Calcium
- Basic functions
  - Bone and teeth formation
  - Blood clotting
  - Muscle and Nerve Action
  - Metabolic Reactions
- Deficiency – rickets
  - Clinical condition - osteoporosis
- Food sources

# Phosphorus

- Serves as partner with calcium
  - Functions
  - Bone and teeth formation
  - Energy metabolism
  - Acid-base balance
- Deficiency unlikely possibly bone loss, weakness, loss of appetite, fatigue, and pain

# Sodium

One of most plentiful minerals in body

Main Function – is body water balance

# Potassium

- Partner with sodium
- Deficiency – likely to occur during periods of vomiting and diarrhea, use of diuretic drugs, malnutrition and surgery
- s/s: Heart muscle problems, difficulty breathing, bloating and overall muscle weakness

# Chloride

- Key element in hydrochloric acid
- Helps control water and acid-base balance
- Primarily involved in digestion and respiration

# Magnesium

- Deficiency and toxicity unlikely unless dietary related usually rare

# Sulfur

- Deficiency and toxicity rare

# Trace Elements

- Iron
- Functions
  - Hemoglobin synthesis
  - General metabolism
- Deficiency
  - anemia
- Toxicity
  - Poisoning in children

# Iodine

- Basic function
  - Participates in the thyroid's gland synthesis of thyroxine
- Deficiency states
  - Goiter
  - Cretinism
  - Hypothyroidism
  - hyperthyroidism
- Toxicity

# Zinc

- Important during growth periods
- Functions
  - Enzyme constituent
  - Immune System
  - Insulin, hemoglobin, taste and smell acuity
- Deficiency
  - Dwarfism
  - Hypogeusia and hyposmia

# Selenium

- Present in all body tissues except fat
- Highest in the liver, spleen, kidney and heart
- Protects cells from damage
- Participates in the regulation of thyroid hormone and vitamin C activity
- Part of the protein center of teeth

## Deficiency

- Impaired immune function
- Keshan Disease

## Toxicity

brittle nails and hair

GI upset, neurological abnormalities

skin rash, garlic odor

# Other Trace Elements

- Fluoride
- Copper
- Manganese
- Chromium
- Molybdenum
- Other essential trace elements

# Mineral Supplementation

- Life cycle needs
  - Pregnancy and lactation
  - Adolescence
  - Adulthood
- Clinical needs
  - Iron-deficiency anemia
  - Weight-loss programs
  - Zinc deficiency
  - Potassium-losing drugs

# Water Balance

- Amount
- Distribution

- Functions
  - Solvent
  - Transport
  - Body form and structure
  - Body Temperature
  - Body lubricant

- Compartments
  - Extracellular
    - Blood plasma
    - Interstitial
    - Secretory
    - Tissue Fluid
  - Intracellular

- Intake and Output

- Intake 3 ways

- Output

- Kidneys
    - Skin
    - Lungs
    - Fecal Elimination

# Nutrition Throughout the Life Cycle

- Pregnancy and Lactation
  - Increased need for energy in the form of kilocalories
  - Approximately 300 kcal. Per day increase starting with the second trimester for a total of 2200-2500kcal./day

- Nutrients needed for growth and development
- Good diet does not equate to a successful pregnancy but they do increase the chance of delivering a full term healthy infant

- Reason for increased needs
  - Rapid growth of fetus
  - Development of placenta
  - Growth of maternal tissues
  - Increased maternal blood volume
  - Amniotic fluid
  - Storage reserves

- Social Habits
  - Alcohol
  - Cigarettes
  - Drugs
  - Caffeine

- Lactation

- Milk production requires about 800kcal./day for both the process and the product

- Infancy

- 1<sup>st</sup> year most rapid growth
- Double birth weight in 6 months
- Triple weight in one year
- Human milk (breast milk) ideal first food for infants
- Cow's milk not given till after age 1

- Whole milk between ages 1-2
  - Should not be reduced milk because
    - Insufficient energy is not produced
    - Linoleic acid – the fatty acid for growth in the fat portion is lacking

Solid foods – not developmentally ready until 6 months of age

- First food – rice cereal
- Vegetables
- Fruits
  - Introduce one food at a time for 5-7 days
  - As solid food increases breast milk or formula decreases
  - NO HONEY til after age 1
  - 8-9 months table food cooked chopped and simply seasoned

# Foods to Avoid Initially

- Allergens
  - Wheat, egg white, citrus juice, nuts and chocolate
- Honey
- Foods with high risk of choking
  - Hot dogs, nuts, grapes, carrots, popcorn , cherries, peanut butter and round candy

- Toddlers (1-3)
  - Decrease in growth after first year
  - Sweets should be reserved for special occasions, and not used habitually or as bribes to get a child to eat

- Preschool Age (3-5)
  - Form definite responses to food
  - Shapes and containers appealing
  - Let them set portions
  - Temperature of Foods
  - Prone to food jags
  - Group eating becomes a means of socialization

- School Age (5-12)
  - Slow and irregular growth rate
  - Preceding adolescence
  - Decrease in food requirement
  - Family food attitudes are imitated
  - Outside activities compete with family meal times
  - Breakfast important for problem solving and memory skills

- Adolescents (12-18)
  - Onset of puberty
  - 2<sup>nd</sup> largest growth spurt
  - Chronological age is insignificant
  - Physiological age becomes important
  - Large appetite chara. Of rapid growth period
  - Vitamin intake erratic (folate deficiency)

- Girls
  - Fat deposits esp. abd. Area, subq. Fat increases, hips widen
- Boys
  - Increased muscle mass
  - Increased long bone growth
  - Growth spurt slower than girls but soon passes her in height and weight

- Eating patterns
  - Tend to skip lunch
  - Energy from snacks and fast foods
  - Careful with alcohol
  - Obesity
    - Peer pressure
  - Eating disorders

- Young Adulthood (20-44)
  - Greater protein requirement than necessary leading to chronic kidney disease
  - Mineral requirements
    - Calcium
    - Vitamin
  - Vitamin Intake lacking

- Middle Adults (45-64)
  - Time of regrouping coming to terms
  - Energy and protein needs continue
  - Calcium takes on special importance especially for women
  - Potential for osteoporosis and bone fracture
  - Early evidence of chronic disease

- Older Adults (65 years +++)
  - Gradual decrease in physical abilities and strength
  - Vary based on personal and physical resources
  - Prone to chronic diseases
  - Distribution of body fat changes
  - Calcium, iron, Vit D needs increase

# Malnutrition

## **Signs of Malnutrition**

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- Community Resources
  - Older Americans Act
  - Congregate Meals
  - Home Delivered Meals

# Community Food Supply and Health

- Food Technology
  - Food Pesticides
  - Organic farming

# Food Safety and Health Promotion

- Government Agencies
  - Food assistance Programs
- Food Labels

# Food Borne Disease

- Food Sanitation
- Food Contamination

# Food Habits and Cultural Patterns

- Cultural Food Habits
  - Primarily based on
    - Food availability
    - Economics
    - Personal food meanings and beliefs
    - Foods in any culture take on symbolic meaning

- They develop from our everyday living habits and family relationships
- Determines
  - What is eaten
  - When it is eaten
  - How it is eaten

- Jewish p. 249
- Three basic groups
  - Orthodox
  - Conservative
  - Reform
  - The basic body of dietary laws is called:
    - Rules of Kashruth
    - Foods selected and prepared according to these rules are called Kosher

- Muslim p. 250
  - Dietary laws are based on the restriction or prohibition of some foods and the promotion of others derived from the Islamic teachings in the Koran
  - Pork is strictly prohibited
  - Alcohol strictly prohibited
  - Ramadan- a 30 day period of daylight fasting

- Spanish and Native American p.251

- African American p. 252
- Greater prevalence of lactose intolerance
- Hopping John Traditionally served on New Year's Day
- Frying is common

- Asian Food Pattern p. 255
- Soups are commonly used at meals
- Stir frying
- Japanese diet high insodium

- Mediterranean Influences p. 256
  - Meals are associated with warmth and fellowship
  - Milk seldom used alone; Cheese favorite
- Greek
  - Everyday meals are simple
  - Bread is the center of the meal
  - Milk seldom as a beverage/yogurt
  - Lamb favorite meat

- Social Influences
- Psychological Influences
- Economic Influences

- Food Fads
  - Claims
  - Basic errors
  - Dangers
  - Vulnerable groups

# Changes in American Food Habits

- Making food choices Box14-2 p. 262
- Changing American Food Patterns
  - Households
  - Working Women
  - Family Meals
  - Meals and snacks
  - Health and Fitness
  - Economical buying
  - Fast Foods

- Weight Management
- Definitions
  - Body composition
  - Body Mass index

- Causes of Obesity
  - Basic energy balance
  - Obesity Gene
  - Genetic and family factors
  - Family reinforcement
  - Physiologic Factors

# Extreme Practices

- Fad diets
- Fasting
- Drugs
- Surgery
  - Gastric bypass
  - Adjustable gastric banding
  - Lipectomy/liposuction

# Sound Weight Management Program

- Behavior modification
- Basic Energy Balance
- Principles of a sound food plan

- Underweight
  - Causes and treatment
    - Wasting disease
    - Poor food intake
    - Malabsorption
    - Hormonal imbalance
    - Energy imbalance
    - Poor living situation

# Disordered Eating

- Anorexia Nervosa
- Bulimia Nervosa
- Compulsive Overeating

# Clinical Nutrition

- Nutritional Assessments
  - Collection
  - Analysis
  - Planning
  - Implementing

# Nutritional Intervention

- Mode of feeding
  - Oral
  - Assisted oral
  - Enteral
  - Parenteral

# Diets

- See Handout:
  - “Applied Principles of Diet Therapy”