Water-Soluble Vitamins

Biotin, Folate, Niacin, Pantothenic acid, Riboflavin, Thiamin, Vitamin B₆, Vitamin B₁₂, Vitamin C
Presentation Notes – Water-Soluble Vitamins

ChooseMyPlate – Fruits and Water-Soluble Vitamins
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Water Soluble Vitamins

- Dissolve in water
- Pass easily through the bloodstream
- Remain in the body for a short time
- Are needed on a daily basis

Include Biotin, Folate, Niacin, Pantothenic Acid, Riboflavin, Thiamin, Vitamin B6, Vitamin B12, Vitamin C.
**Biotin**

**Functions**
- Helps body use carbohydrates, proteins, and fats
- Helps stabilize sugar level

**Food Sources**
- Green leafy vegetables
- Whole-grain breads and cereals
- Liver
- Egg yolks

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**Deficiencies and Excesses**

**Effects of getting too little**
- Dry, scaly skin
- Inflammation of the stomach and intestines
- Hair loss

**Effects of getting too much**
No known effects
Folate (B9) (Folacin, Folic acid)

**Functions**
- Teams with vitamin B12 to help build red blood cells and form genetic material (DNA)
- Helps your body use proteins
- Helps prevent birth defects in brain and spinal cord

**Food Sources**
- Green leafy vegetables
- Dry beans and peas
- Fruits
- Enriched and whole-grain breads

**Deficiencies and Excesses**

**Effects of getting too little**
- Anemia
- Feel tired and weak
- Develop diarrhea
- Weight loss

**Effects of getting too much**
- Masks the symptoms of vitamin B12 deficiency

A health professional may prescribe additional folate during pregnancy and lactation.
Niacin (Vitamin B₃)

**Functions**
- Helps your body release energy from carbohydrates, proteins, and fats
- Needed for a healthy nervous system and mucous membranes

**Food Sources**
- Meat, poultry, fish
- Enriched and whole-grain breads and cereals
- Dry beans and peas
- Peanuts

**Deficiencies and Excesses**

**Effects of getting too little**
- Pellagra – a disease that produces skin lesions and mental and digestive problems
  - Sensitivity to sunlight
  - Aggression
  - Dry and reddened skin with sores
  - Insomnia
  - Weakness

**Effects of getting too much**
- Flushing red of the face
Pantothenic acid

**Functions**
- Helps the body release energy from carbohydrates, proteins, and fats
- Helps the body produce cholesterol
- Promotes normal growth and development
- Needed for a healthy nervous system

**Food Sources**
- Meat, poultry, fish
- Eggs
- Dry beans and peas
- Whole-grain breads and cereals
- Milk
- Some fruits and vegetables

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**Deficiencies and Excesses**

**Effects of getting too little**
- Nausea
- Insomnia

**Effects of getting too much**
No known effects
Riboflavin (Vitamin B<sub>2</sub>)

**Functions**
- Helps your body release energy from carbohydrates, proteins, and fats
- Contributes to body growth and red blood cell production

**Food Sources**
- Enriched breads and cereals
- Milk and other dairy products
- Green leafy vegetables
- Eggs
- Meat, poultry, fish

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**Deficiencies and Excesses**

**Effects of getting too little**
- Ariboflavinosis
  - Sore throat
  - Cracked lips
  - Moist scaly skin
  - Magenta-colored tongue
  - Decreased red blood cell count

**Effects of getting too much**
- No known effects
### Thiamin (Vitamin B₁)

#### Functions
- Helps turn carbohydrates into energy
- Needed for muscle coordination and a healthy nervous system

#### Food Sources
- Enriched and whole-grain breads and cereals
- Dry beans and peas
- Lean pork
- Liver

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#### Deficiencies and Excesses

**Effects of getting too little**
- Beriberi
  - Weakened heart
  - Wasting
  - Partial paralysis

**Effects of getting too much**
- No known effects
## Vitamin B6

### Functions
- Helps body release energy from carbohydrates, proteins, and fats
- Promotes healthy nervous system
- Helps make nonessential amino acids

### Food Sources
- Poultry, fish, pork
- Dry beans and peas
- Nuts
- Whole grains
- Some fruits and vegetables
- Liver and kidneys

### Deficiencies and Excesses

**Effects of getting too little**
- Anemia (low red blood cell count)

**Effects of getting too much**
- Impairment of proprioception (awareness of your own movement)
- Nerve damage
- Skin lesions
### Vitamin B₁₂

#### Functions
- Helps body use carbohydrates, proteins, and fats
- Helps maintain healthy nerve cells and red blood cells
- Used in making genetic material

#### Food Sources
- Found naturally in animal foods, such as meat, poultry, fish, shellfish, eggs, and dairy products
- Some fortified foods
- Some nutritional yeasts

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**Deficiencies and Excesses**

**Effects of getting too little**
- Pernicious anemia (low red blood cell count)

**Effects of getting too much**
No known effects
Vitamin C (Ascorbic Acid)

**Functions**
- Helps maintain healthy capillaries, bones, skin, and teeth
- Helps form collagen, which gives structure to bones, cartilage, muscles, and blood vessels
- Helps your body heal wounds and resist infections
- Aids in absorption of iron
- Works as an antioxidant

**Food Sources**
- Fruits – citrus fruits (orange, grapefruit, tangerine), cantaloupe, guava, kiwi, mango, papaya, strawberries
- Vegetables – bell peppers, broccoli, cabbage, kale, plantains, potatoes, tomatoes

**Deficiencies and Excesses**

**Effects of getting too little**
- Scurvy
  - Paleness
  - Depression
  - Spongy gums
  - Bleeding from mucous membranes

**Effects of getting too much**
- Indigestion
- Diarrhea
Questions?
References and Resources

Textbooks:

Website: