

Minerals & Vitamins

A vibrant collage of various fruits, vegetables, and nuts. Overlaid on the image are several red circular labels with white text, each representing a different nutrient: B12, B6, Mg, A, B2, Ca, B1, and Q10. The background includes items like strawberries, broccoli, carrots, avocados, almonds, cashews, and various grains.

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Pre-Presentation Trivia!



Q1: Calcium is one of major minerals of the body.
What is daily suggested calcium intake for adults
50-70+?



Answer

Men 51-70 y.o.- 1,000 mg.

Women 51-70 y.O.- 1,200 mg.

Everyone 70+y.o- 1,200 mg.

Q2: Multivitamin supplements are regulated by the FDA.

- A. True
- B. False

Answer

B. False

Q3: Healthy hair, nails and skin related to
vitamin(s)_____



Answer

Vitamins A, E and D

Q4: What type of vitamins are stored in the liver, fatty tissue, and muscles?

- A. Water Soluble
- B. Fat Soluble

Answer

B. Fat Soluble



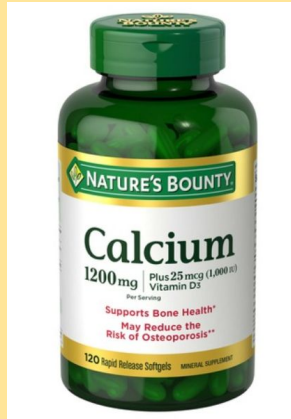
Minerals

Major minerals

- Require more than 100 mg/day
- Calcium, Sodium, Potassium, Phosphorus, Sulfur, Chloride, Magnesium

Trace minerals

- Require less than 100 mg/day
- Zinc, Iron, Manganese, Copper, Iodine, Cobalt, Fluoride and Selenium



Calcium Storage

- 99% is in bones and teeth
- >1% in body fluids (blood)



Calcium Absorption

- The average adult needs 1,000 mg of calcium per day.
- The amount increases to 1,200 mg per day for women 50+ and men 71+
- Requires slightly acidic environment and vitamin D
- Absorption happens in upper and small intestine
- Normally absorption of calcium from food is 25%



What decreases Calcium Absorption?

- ❖ High fiber intake
- ❖ Due to a decrease in estrogen production after menopause, women's bodies are less able to retain calcium from dietary sources.
- ❖ Rapid intestinal motility
- ❖ Excess intake of phosphorus and caffeine
- ❖ Vitamin D deficiency
- ❖ Polyphenols (tannins in tea)
- ❖ Aging
- ❖ Certain medications

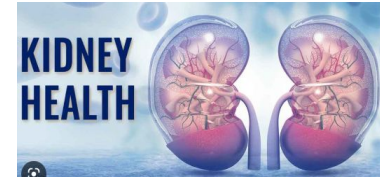


Magnesium

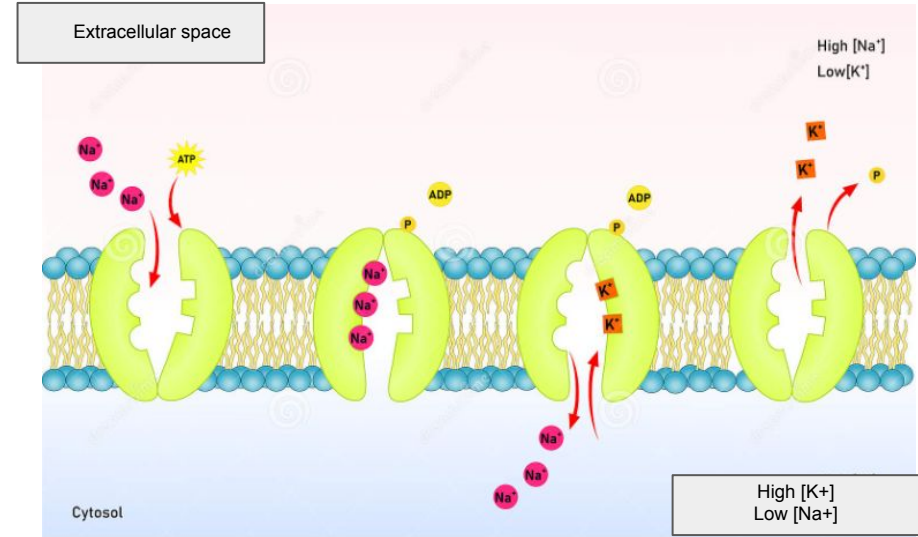
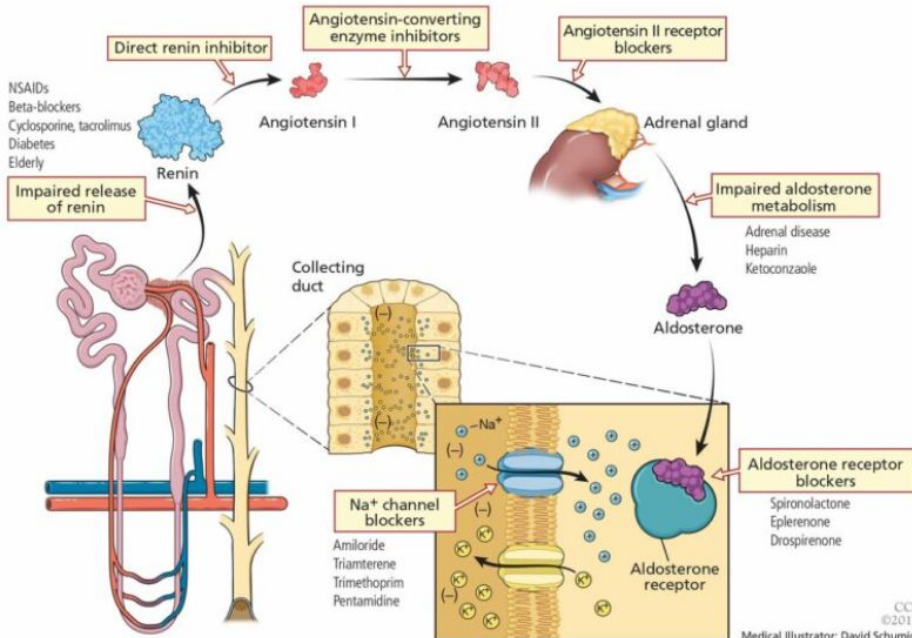
- Magnesium deficiency can impair memory and increase oxidative stress
 - Supplements can be ineffective
- Source of food: whole grains, dark-greens, leafy vegetables, dried beans, legumes, soybeans, baked beans, lentils, peanuts, almonds and cashews



Potassium



- Potassium plays a vital role in maintaining cellular function (3 Na⁺ to 2K⁺)
- Needed for proper fluid balance
- Nerve transmission
- Muscle contraction



Potassium in Foods by Class of Food**Low Potassium****Fluids:****To 150mg**

Apple juice, 1/2 cup	148
Coffee, 6/12 ounces	124/248
Cranberry juice, 1/2 cup	31
Ginger ale, 12 ounces	4
Tea, 6/12 ounces	27/54

Medium Potassium**From 151 to 200mg**

Grape juice, cnd or bottle, 1/2 cup	187
Grapefruit juice, cnd, unsw, 1/2 cup	189
Pineapple juice, cnd, unsw, 1/2 cup	168

High Potassium**201 or more mg**

Milk, 1 cup, whole/skim	370/412
Milk, 1% lowfat, 1 cup	381-397
Orange juice, fresh, 1/2 cup	248
Soy milk, 1 cup	338

Fruits:**To 120 mg**

Apples, peeled, sliced	62
Applesauce, cnd, swd/unsw	78/92
Apricot, 1 medium	105
Blueberries, raw	65
Cherries, sour, red, cnd	120
Cranberries, raw	39
Cranberry sauce, cnd, swtd	36
Fig, fresh, 1 medium	116
Fruit cocktail, cnd, heavy syrup juice pack	118
Grapes, ten	93-105
Lemon, 1 medium	80
Lime, 1 medium	68
Peaches, cnd, heavy syrup	118
Pears, ckd, heavy syrup/juice	119
Pineapple, raw, 1 medium	114
Plums, cnd, heavy syrup	118
Plums, raw, 1 medium	114
Raspberries, raw	94
Rhubarb, ckd, with sugar	115
Watermelon, diced	93

From 121 to 250 mg

Apricots, cnd, heavy syrup juice pack	181 205
Blackberries, raw	141
Cherries, sweet, ten	152
Elderberries, raw	209
Grapefruit, 1/2 medium	167
Grapefruit, cnd, with syrup	164
Orange, 1 medium	237
Peach, 1 medium	171
Peaches, cnd, juice pack	159
Pear, 1 medium, Asian/Bosc	148/176
Pear, 1 medium, Bartlett, D'Anjou	208/250
Pineapple, cnd, pieces, heavy syrup	133
Pineapple, cnd, pieces, juice pack	153
Plums, cnd, juice pack	194
Pricklypear, 1 medium	226
Raspberries, frozen, sweetened	143
Strawberries, raw	124
Strawberries, frozen, sweet, sliced	125
Tangerine, 1 medium	132

251 or more mg

Apricots, dried, uncooked	896
Apricots, dried, ckd, unsw+liq	611
Avocado, 1/2 medium, California Florida	549 742
Banana, medium	451
Cantaloupe, 1/4 medium	413
Dates, chopped	581
Figs, five dried	666
Honeydew melon, 1/4 medium	875
Kiwifruit, 1 medium	252
Mango, 1 medium	323
Nectarine, 1 medium	288
Peaches, dried, ckd, unsw+liq	413
Peaches, dried, uncooked	797
Plantain, boiled, sliced	358
Pomegranate, 1 medium	399
Prunes, ckd, unsw + liq	354
Prunes, 5 large, dried, uncooked	365
Raisins, seedless	545
Sapodilla, 1 medium	328

Vegetables:**To 125 mg**

Alfalfa seeds, sprouted, raw	13
Arugula, raw	37
Bagel, plain	50
Bamboo shoots, cnd	53
Beans, green, ckd from frozen	76
Bean sprouts, mung, raw	78
Bean sprouts, mung, ckd	63
Bread, white, 1 slice	28
Cabbage, raw, red/common	72/86
Carrots, ckd, from frozen	116
Cauliflower, ckd from frozen	125

From 126 to 250 mg

Asparagus, ckd, 6 spears	144-202
Beans, green, ckd, from raw	185
Bread, pumpernickel, 1 slice	141
Broccoli, ckd, from frozen	167
Broccoli, ckd, from raw	127
Brussels sprouts, ckd, from raw	246
Cabbage, common, ckd	154
Carrots, ckd from raw	177
Carrots, raw, grated	178
Cauliflower, ckd from raw	202
Cauliflower, raw florets	178

251 or more mg

Artichoke, 1 medium	425
Beans, black, ckd, drained	306
Beans, lima, ckd from frozen	347-370
Beans, kidney, ckd	365
Beans, pinto, ckd, drained	398
Beet greens, ckd	654
Beets, ckd, diced or sliced	265
Black-eyed peas, ckd from frozen	319
Black-eyed peas, ckd from raw	347
Cabbage, bak choi, ckd	316
Kohlrabi, ckd	281

List of Foods High in Potassium

Sodium

Upper limit 1500mg/day- 2300 mg/day

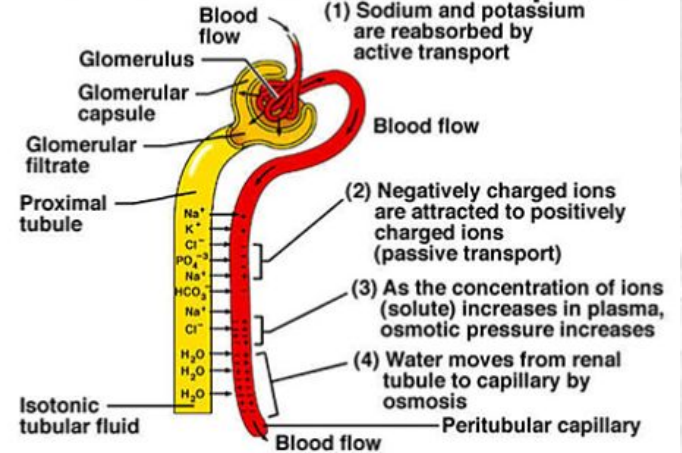
Pros

- to conduct nerve impulses
- contract and relax muscles
- maintain the proper balance of water and minerals
- an essential nutrient and is needed by the body in relatively small amounts
- electrolyte balance (water follow electrolytes, sodium one of them, to maintain homeostasis)
- natural preservative of food (make food last longer)

Cons

- high sodium consumption can raise blood pressure (Hypertension)
- major risk factor for heart disease and stroke
- low sodium diet may be helpful in relieving fluid accumulation.
- Himalayan salt contains heavy metals



Sodium and Water Reabsorption

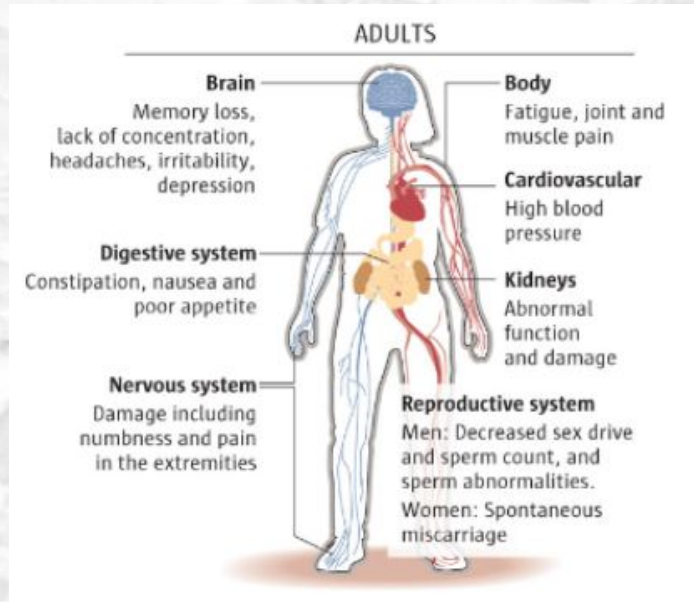
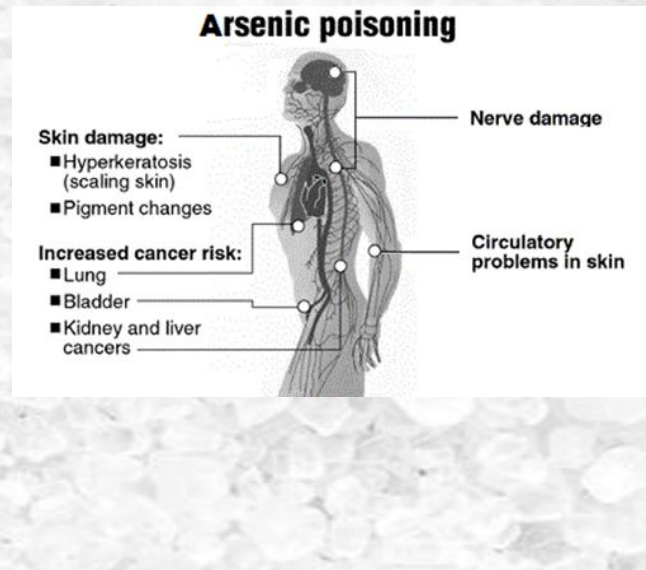


Choose Good Source of Sodium

- Celery, beets and milk are a few of the foods where you'll find it naturally.
- Himalayan pink salt have been found to contain potentially toxic elements like arsenic, mercury, and lead.
- Continue to eat Himalayan salt, lead (and mercury and all radioactive heavy metals) will continue to deposit in your body.

Lead Poison

Table Salt	vs	Himalayan Pink Salt
1 tsp iodised table salt		1 tsp himalayan pink salt
		
Minerals		Minerals
Sodium (mg) 1935		Sodium (mg) 1700
Iodine (mcg) 75		Iodine (mcg) Nil
No additional minerals		Trace amounts of calcium, potassium, magnesium and other minerals



Chose GOOD Source of Sodium

FINE SEA SALT - good for baking

FLAKY SEA SALT-adding or topping to perfection

KOSHER SALT-“koshering,” or curing meats


DIAMOND CRYSTAL -cooking, but it’s too easy to accidentally
overseason your food

DIAMOND CRYSTAL KOSHER SALT - best for cooking

IODIZED SALT-best for your salad because of Iodine



ELECTROLYTES EXPLAINED



Eat electrolyte-rich foods and drink plenty of fluids to keep well-hydrated.

Electrolytes are an important part of proper hydration. These essential minerals maintain pH levels in the blood, transmit electrical signals to your nerves and muscles and balance fluids in the body. Learn about the different electrolytes found in common foods and beverages.



SALT (Sodium and Chloride)

Found in: celery, canned vegetables, whole grain bread, cottage cheese and broth-based soups
Helps with: fluid retention and cell functions



POTASSIUM

Found in: bananas, melon, avocado, tomatoes and potatoes
Helps with: nerve function



MAGNESIUM

Found in: grains, nuts, seeds and dark, leafy greens
Helps with: muscle function



CALCIUM

Found in: dairy, tofu, greens and fish
Helps with: muscle contraction and bone health



BEST BEVERAGES

Say hello to coconut water, milk, iced tea and electrolyte-packed drinks like Pedialyte®. These beverages can help you rehydrate like a champ.

Source: Abbott

How to Read Labels

Sample Label for Frozen Lasagna

Nutrition Facts	
4 servings per container	
Serving size	1 cup (227g)
Amount per serving	
Calories	280
% Daily Value*	
Total Fat 9g	12%
Saturated Fat 4.5g	23%
Trans Fat 0g	
Cholesterol 35mg	12%
Sodium 850mg	37%
Total Carbohydrate 34g	12%
Dietary Fiber 4g	14%
Total Sugars 6g	
Includes 0g Added Sugars	0%
Protein 15g	
Vitamin D 0mcg	0%
Calcium 320mg	25%
Iron 1.6mg	8%
Potassium 510mg	10%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

1. Serving Information

2. Calories

3. Nutrients

4. Quick Guide to percent Daily Value (%DV)

- 5% or less is **low**
- 20% or more is **high**

FDA

Eating Too Much Salt? Ways to Cut Back...Gradually

<https://www.fda.gov/consumers/consumer-updates/eating-too-much-salt-ways-cut-backgradually>

References

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Vitamins

What are Vitamins?

- ★ Vitamins are organic compounds that people need in small quantities.
- ★ Most vitamins need to come from food as the body does not produce them or produces them in very small quantities.
- ★ Vitamins play a lot of important roles in the body.



What are they?

★ There are 13 essential vitamins:

- Vitamin A
- Vitamin C
- Vitamin D
- Vitamin E
- Vitamin K
- Vitamin B1- Thiamine
- Vitamin B2- Riboflavin
- Vitamin B3- Niacin
- Vitamin B6- Pyridoxine
- Vitamin B12- Cyanocobalamin
- Vitamin B5- Pantothenic Acid
- Vitamin B7- Biotin
- Vitamin B9- Folic acid or Folate



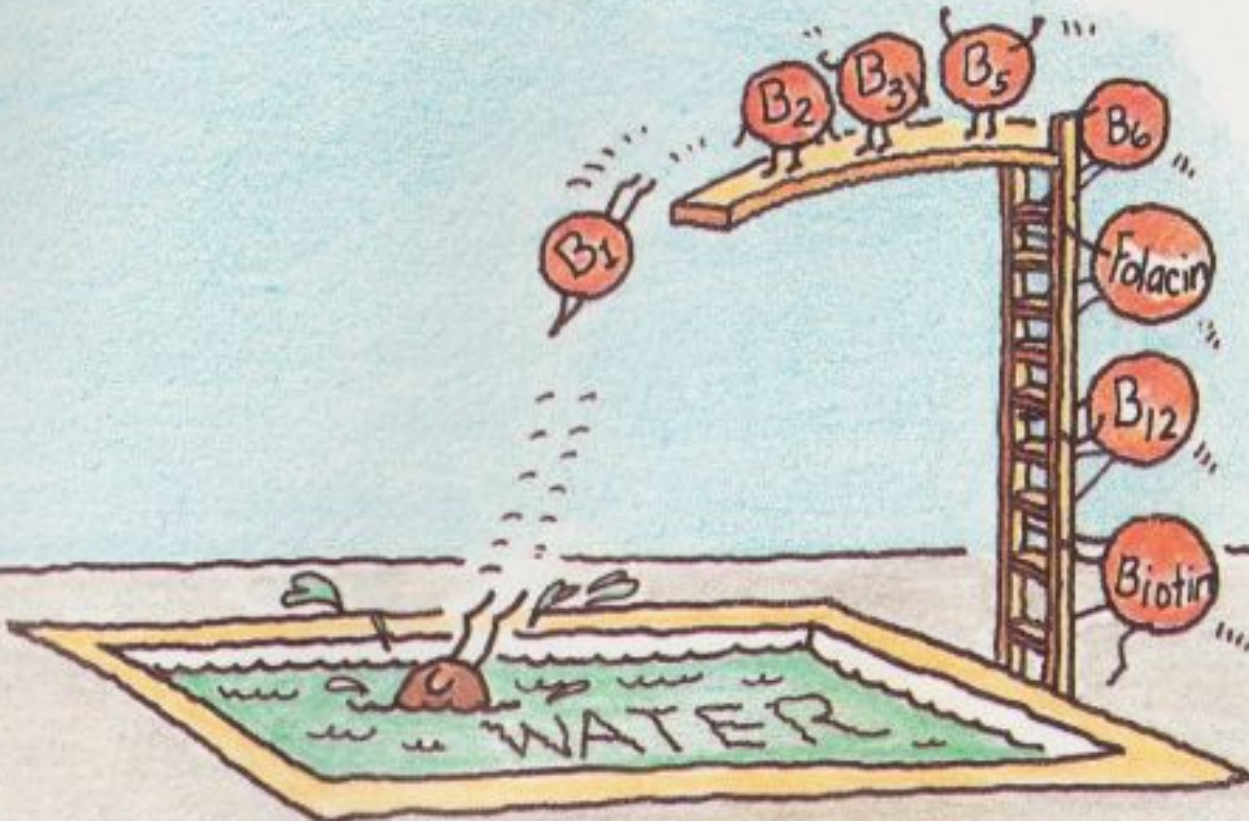
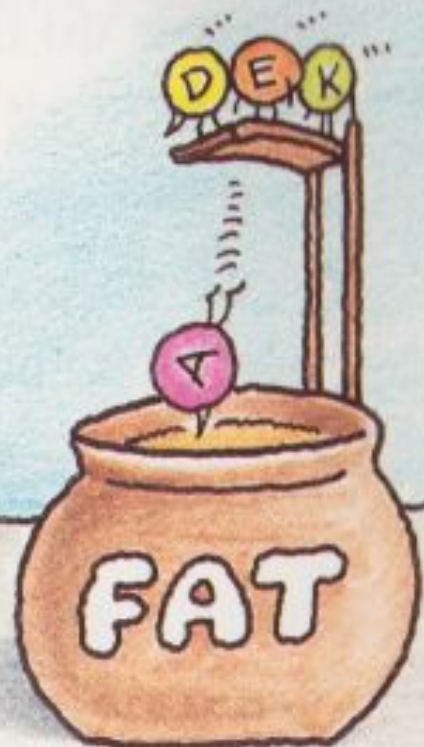
Types of Vitamins

Water Soluble

- ★ Dissolve in water
- ★ Not stored in the body
- ★ They HAVE to be consumed on a regular basis or else a shortage or deficiency might occur
- ★ Vitamin C and all vitamin B's

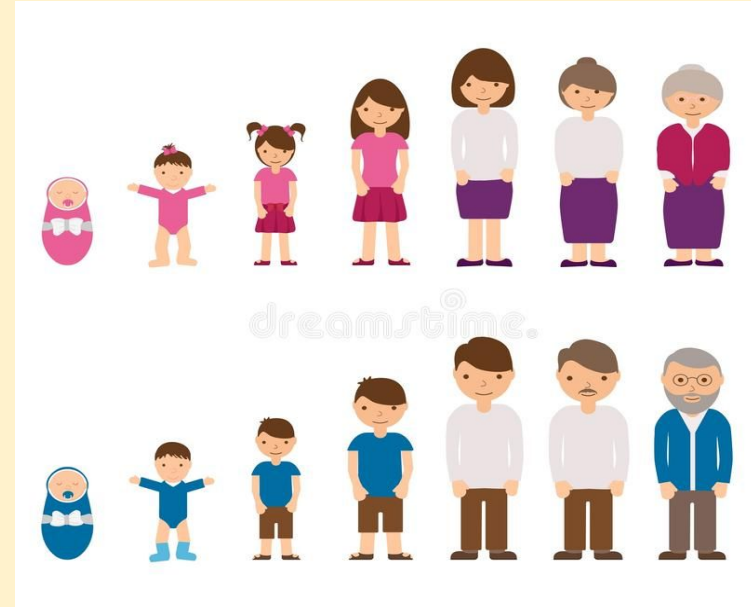
Fat Soluble

- ★ Can't Dissolve in water
- ★ Stored in the liver, fatty tissue, and muscles
- ★ Vitamins A, D, E, K
- ★ Absorbed easier by the body in the presence of dietary fat



As we age, our needs can change too

- ★ Older adults generally have lower calorie needs but similar or even increased nutrient needs compared to younger adults.
 - This is due to less physical activity, changes in metabolism, or loss of bone and muscle mass
- ★ Nutrient needs are affected by chronic health, usage of multiple medicines, and changes in body compositions.



Why is Vitamin B12 so important?

- ★ It is involved in making DNA, red blood cell formation, and proper nerve function.
 - Research is still needed but some studies suggests that low vit. B12 levels have been linked to increased bone fracture risk.
 - Older adults who consume very little to no animal products are at increased risk of vitamin B12 deficiency (plant .
- ★ Older adults don't require more vit. B12 than younger adults (both men & women 2.4mcg RDA) but absorption may decrease with age (due to stomach lining thinning).
- ★ Too little can cause anemia, fatigue, gastrointestinal issues, constipation, unintended weight loss, neurological changes, confusion, and soreness of the mouth or tongue. It also poses greater risk for heart disease and weaken cognitive abilities. If left untreated, vitamin B12 deficiency can cause permanent nerve damage.

To Multivitamin or not to Multivitamin...

- ★ The overall idea of a multivitamin is great but consider that multivitamins...
 - Aren't regulated by the FDA (Food and Drug Administration).
 - May contain heavy metals or harmful ingredients like arsenic.
 - May interfere with medications.
 - In healthy adults, there are no added benefits.
 - Must have third party certifications like USP (US Pharmacopeia) or NF on the label
- ★ If you take supplements, do not take more than 100% of the RDA unless you are under a provider's supervision.



The Oh No's and No-No's

- ★ There are certain vitamins and supplements that shouldn't be taken together or with food!
- ★ **Magnesium and Calcium:** they work good together but they must be in the correct balance in order to be efficient. Research indicates that a calcium to magnesium ratio above 2:1 is linked to an increased risk of metabolic, inflammatory, and cardiovascular disorders.
- ★ **Iron and Green Tea:** the main component in green tea, epigallocatechin gallate (EGCG), binds with iron and reduces its absorption. in moderation and wait two hours after taking an iron supplement.
- ★ **Vitamin C and B12:** it is not advised to take vitamin C and B12 at the same time. High doses of vitamin C can reduce the amount of B12 that's absorbed and metabolized by the body. (better to take it at least 2 hrs after taking B12.
- ★ **Fat-soluble and water-soluble vitamins:** some combinations aren't inherently problematic, but in order to be efficient, they should be avoided.
 - Vit. D and B12 (safe) but vit. D is absorbed better with food but vit. B12 is absorbed better with an empty stomach
 - Water-soluble vitamins require water to be absorbed and without food.

The Yes or Yes's

- ★ Always consult your doctor or RDN for suggestions, tests, which multivitamins, or supplements to take.
- ★ **Magnesium and vitamin D3:** a study has published that without enough magnesium, vit. D synthesis is impaired (providers often advise to pair these together).
- ★ **Omega-3s and Vit.E:** there are research findings that suggest that taking these two enhances heart health and had beneficial effects on serum insulin and insulin resistance.
- ★ **Iron and vit.C:** some providers suggest pairing iron with vitamin C in order to maximize its absorption. However, more research needs to be done.

References

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- ★ <https://health.gov/news/202107/nutrition-we-age-healthy-eating-dietary-guidelines#:~:text=Older%20adults%20generally%20have%20lower,of%20bone%20and%20muscle%20mass.>
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