



Food as Medicine

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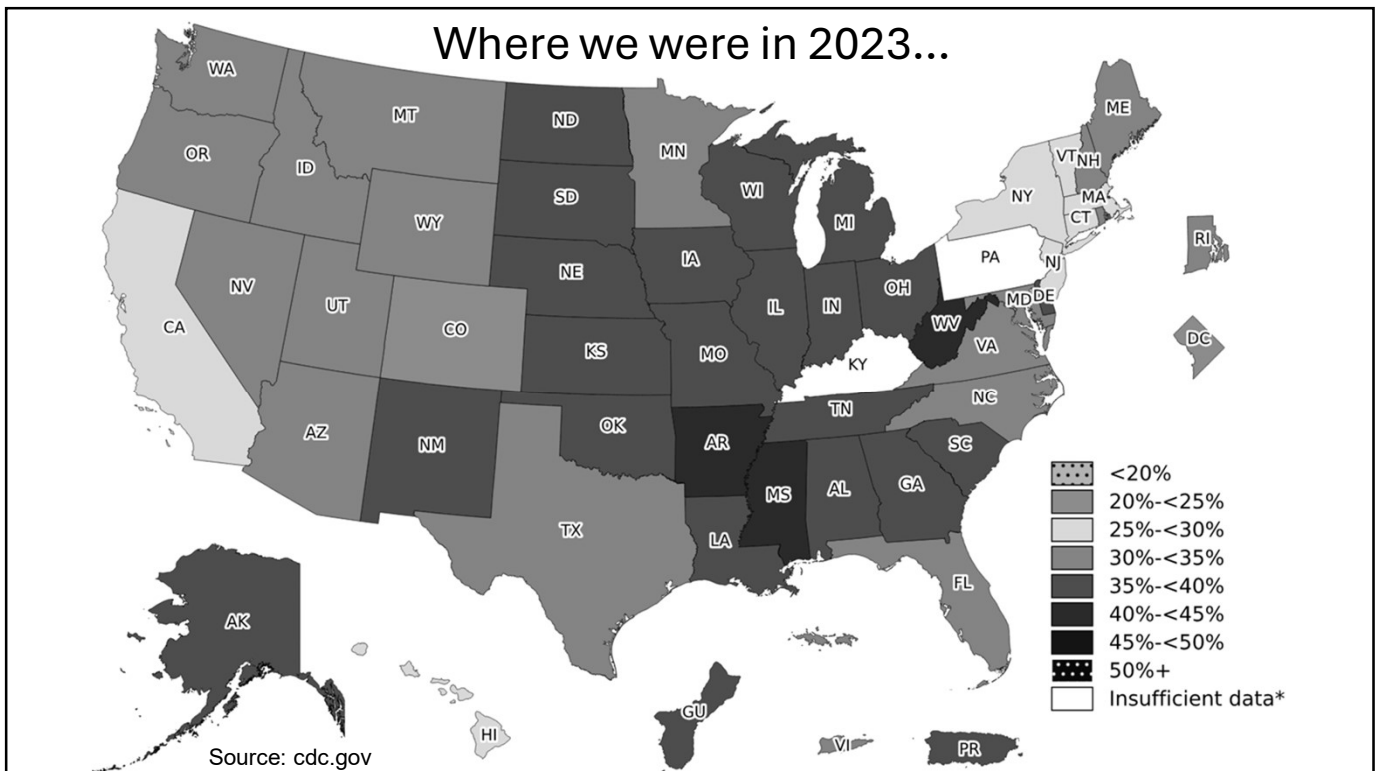
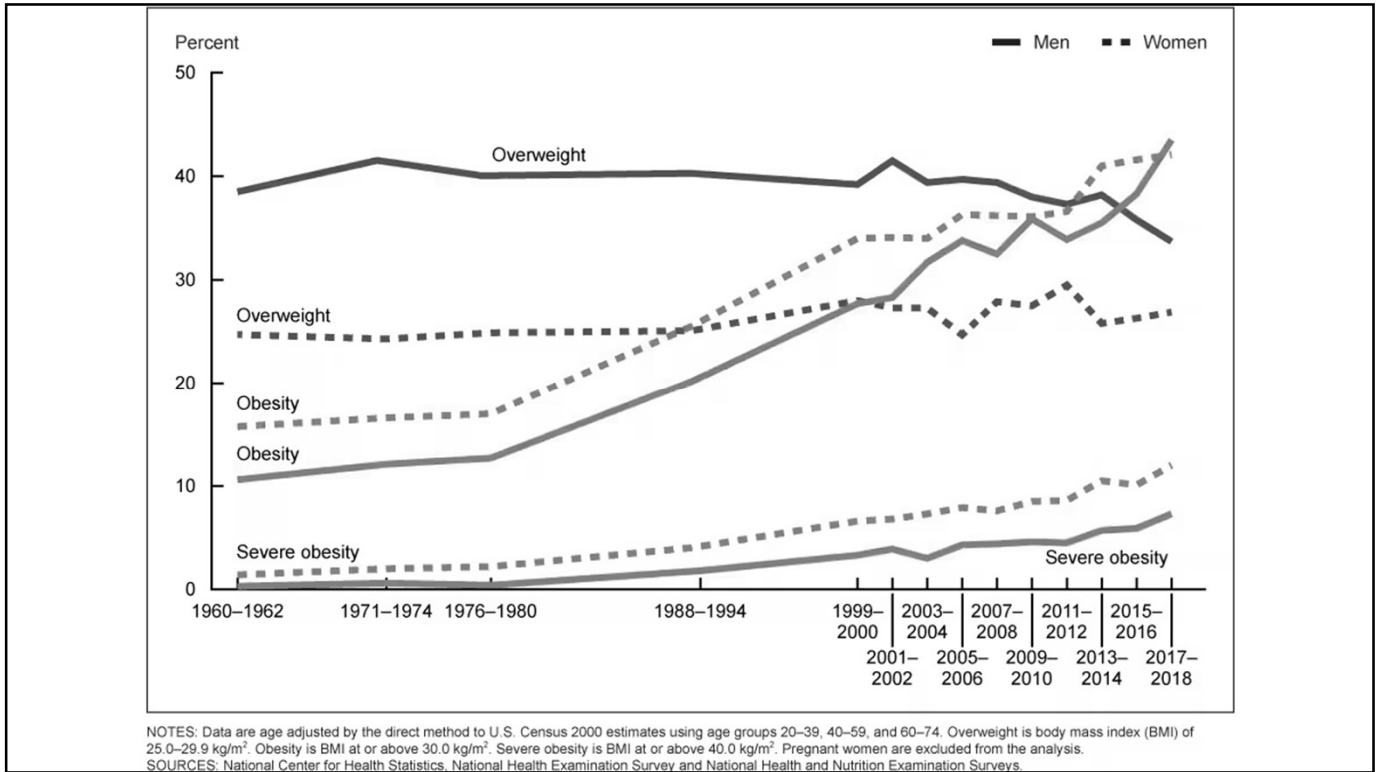
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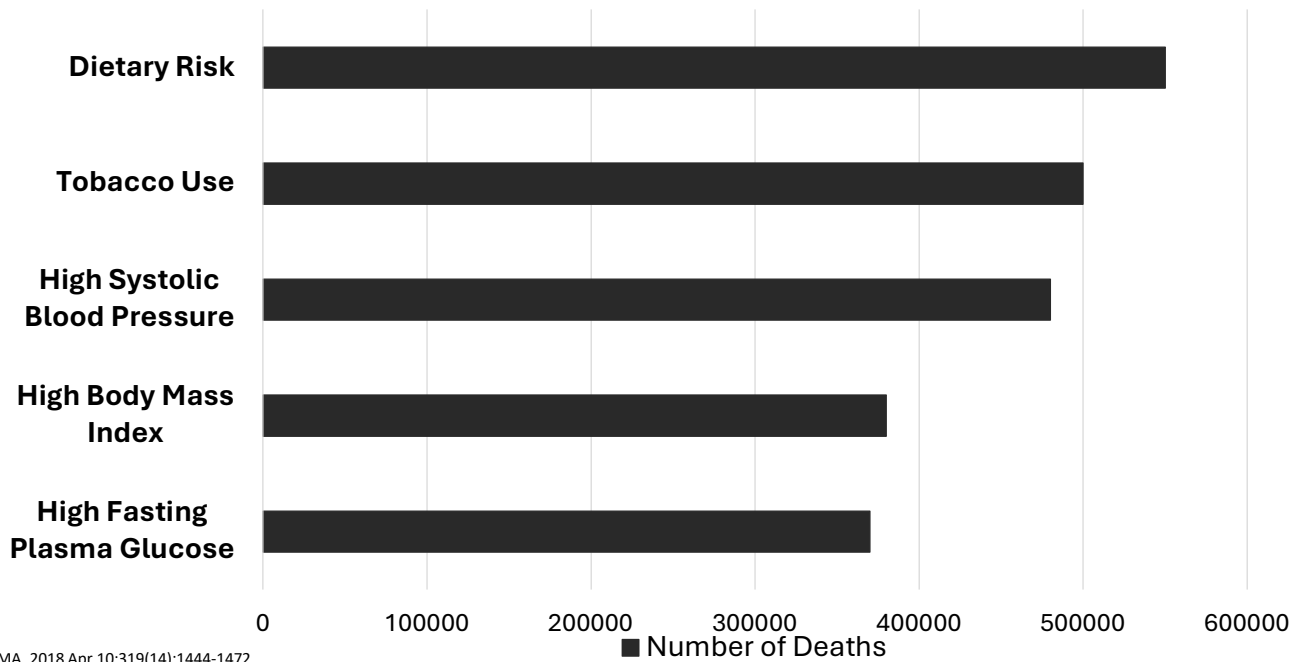
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Objectives

- Describe obesity trends
- Identify contribution of diet to disease and mortality
- Discuss mechanisms by which intensive dietary change can treat and potentially reverse disease
- Recall components of a healthiest diet
- Prescribe patient centered food interventions
- Utilize the Lifestyle & Obesity Medicine Pillars as a framework to approach nutrition and health optimization



Number of Deaths Related to Risk Factors in the United States, 2016



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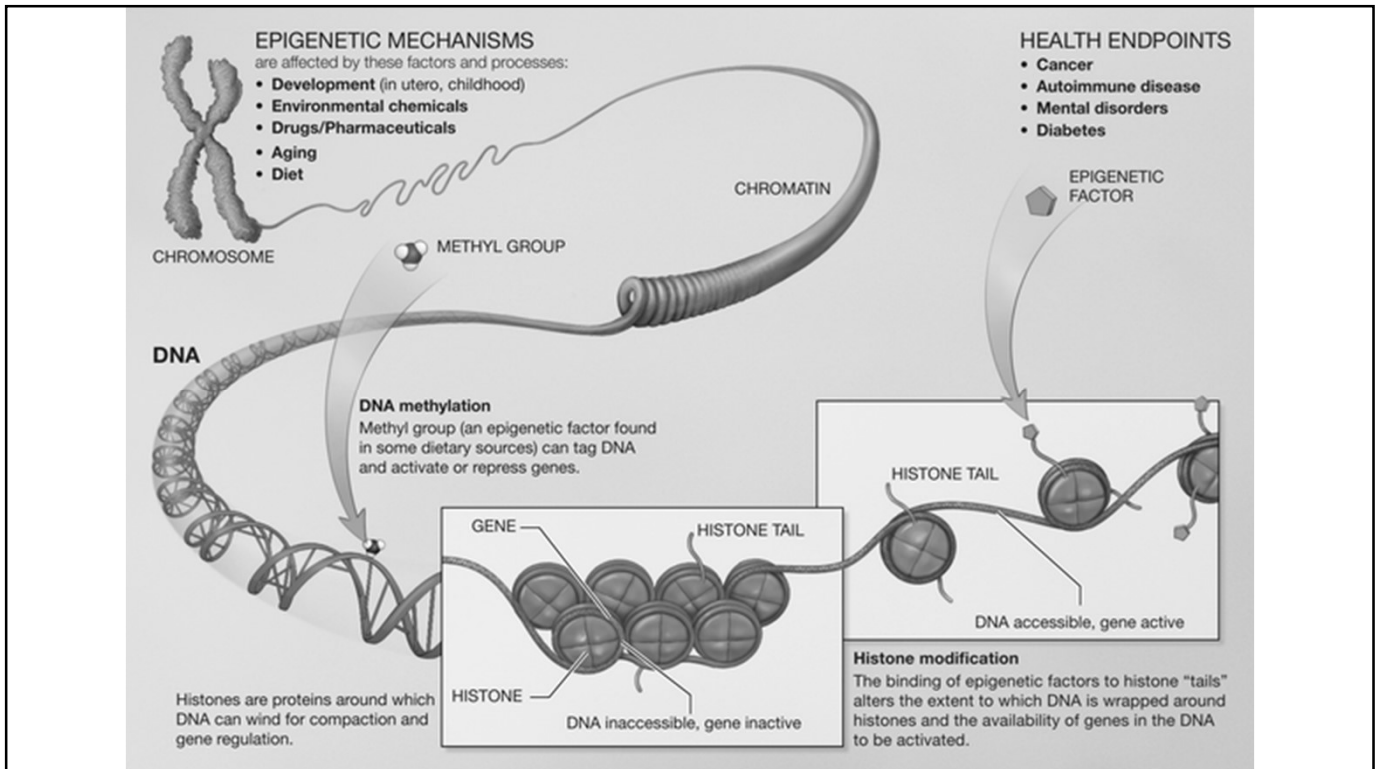
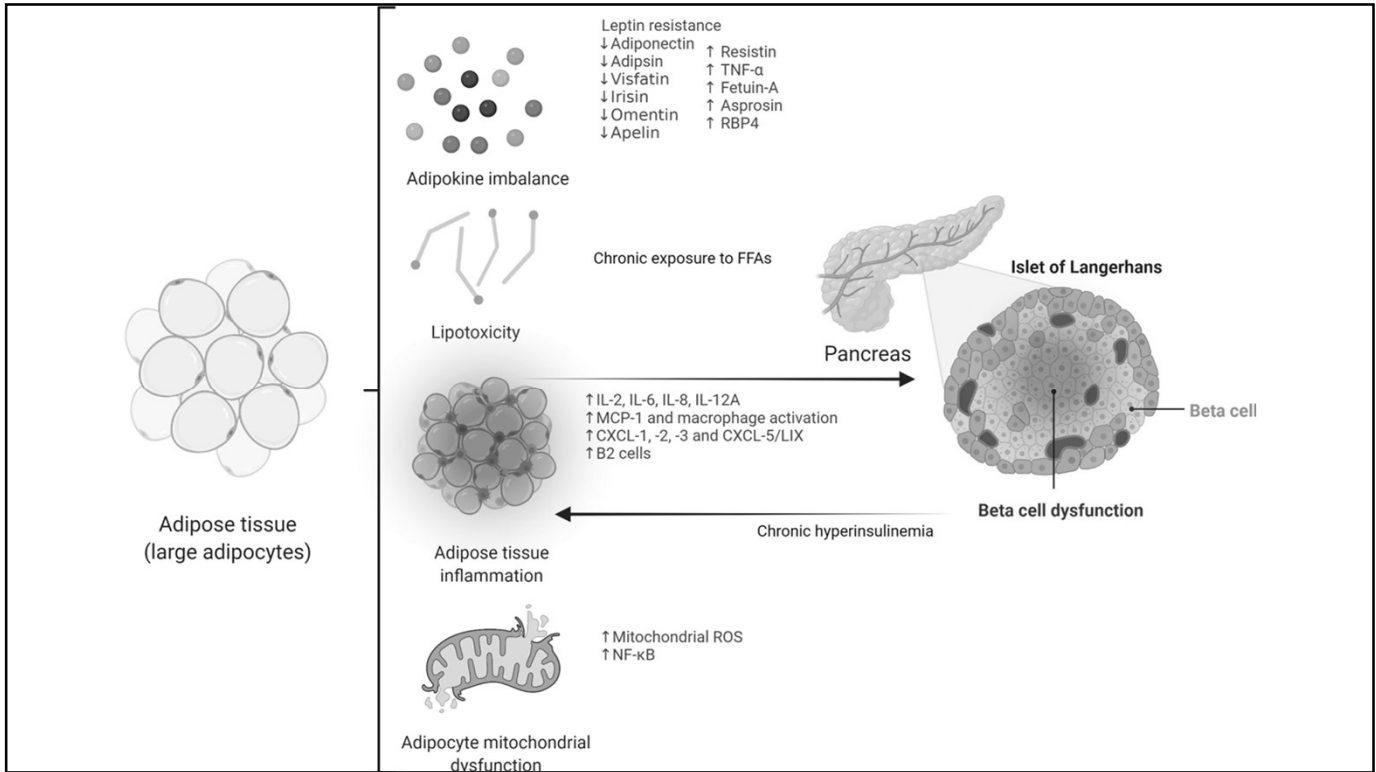
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Gut Microbiome

- Trillions of bacteria in colon
- Healthy bacteria
 - Feed on fiber, polyphenols & resistant starches
 - Create **short-chain fatty acids (SCFAs)**: acetate, propionate, & butyrate
- Unhealthy bacteria
 - Feed on meat, eggs, & food additives
 - Create inflammatory compounds such as **trimethylamine oxide (TMAO)**



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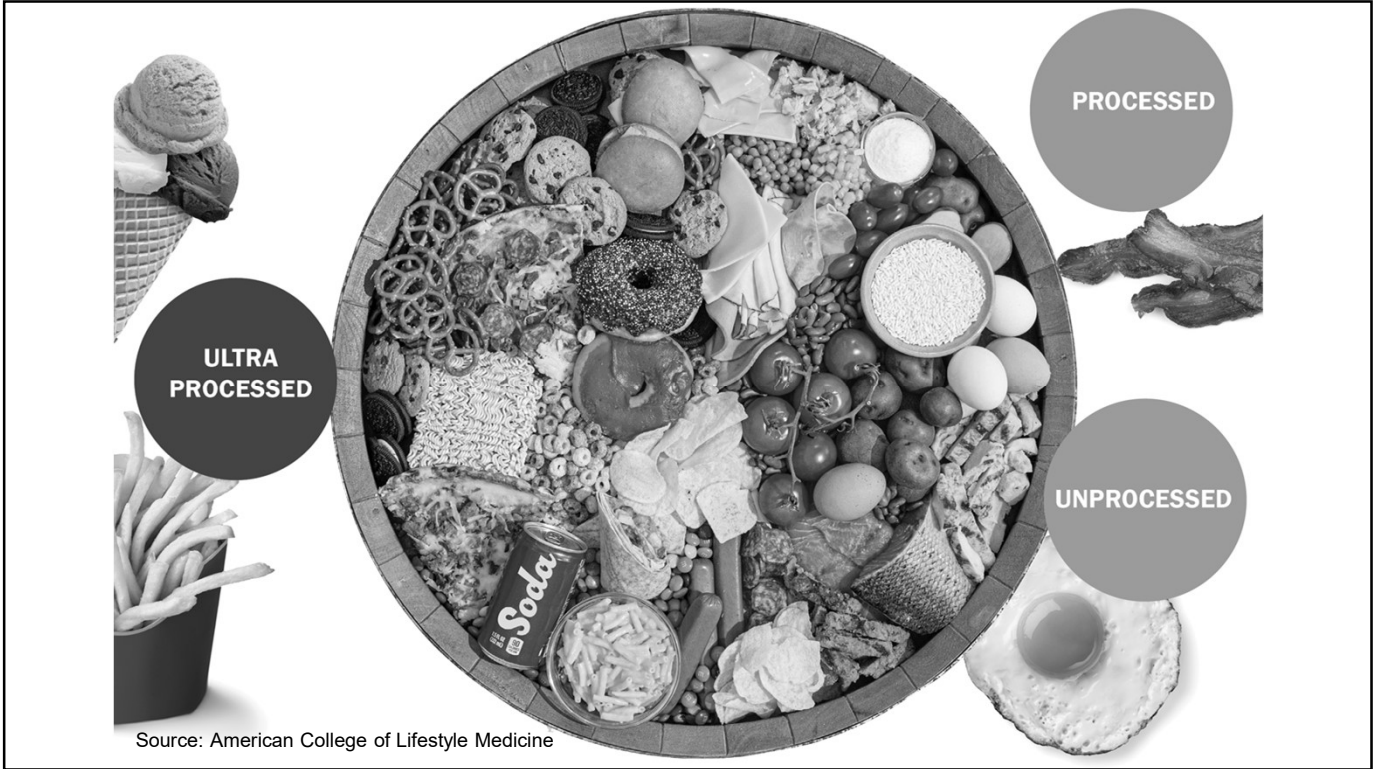
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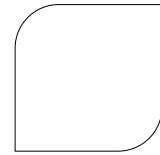
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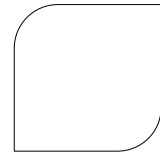
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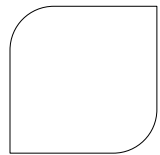
Excesses in the Standard American Diet



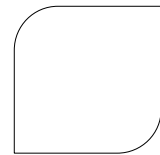
ADDED SUGAR



SATURATED & TRANS FAT



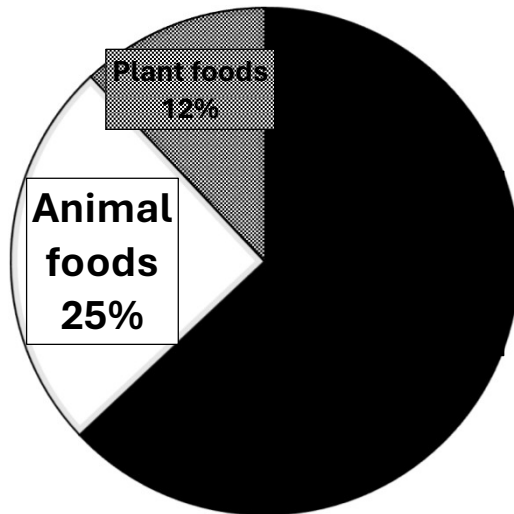
ADDED SODIUM



CHOLESTEROL

AVERAGE DAILY % OF CALORIES CONSUMED

■ Processed foods □ Animal foods ▨ Plant foods



Processed foods

- Added oils & fats (23%)
- Refined flour & cereal (23%)
- Sweeteners (17%)

Animal foods

- Meat, fish, seafood
- Dairy, eggs

Plant foods

- Vegetables
- Fruits
- Nuts & Seeds
- Legumes
- Whole grains

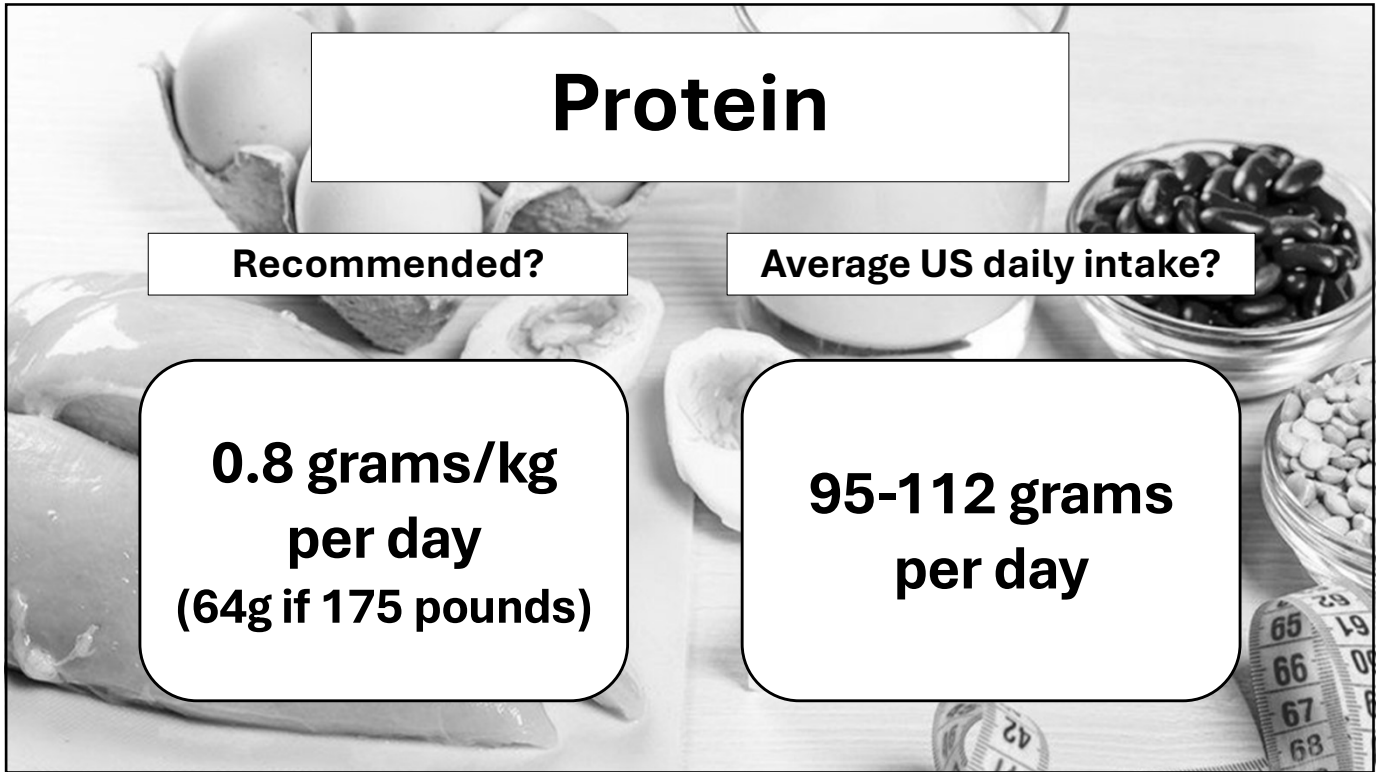
Fiber

Minimum Recommended?

Average US daily intake?

**≥25-38 grams
per day**

**15-18 grams
per day**



Protein

| Recommended? | Average US daily intake? |
|---|---------------------------------|
| 0.8 grams/kg per day (64g if 175 pounds) | 95-112 grams per day |





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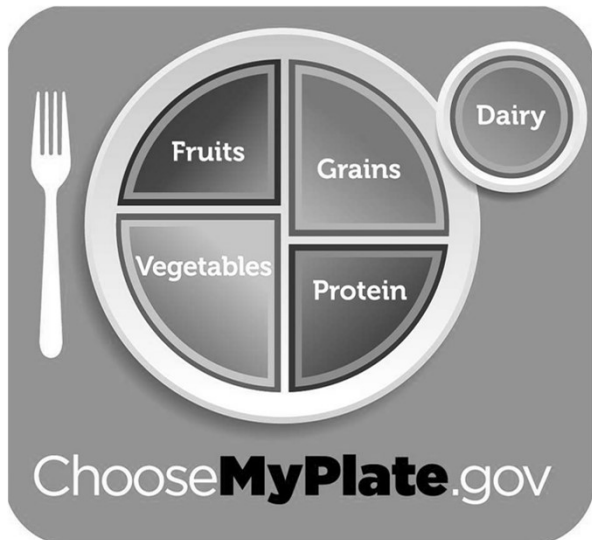
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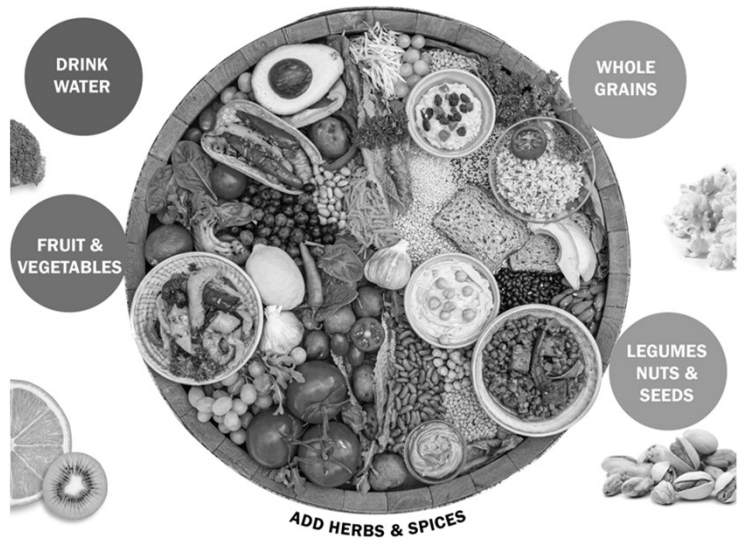
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USDA MyPlate



ACLM Plate



Beans (Legumes/Soy)

Up to 3 servings per day

High in protein and fiber

Lowers cholesterol, weight, blood sugar, and insulin levels

Decrease risk of stroke, depression and colon cancer

Soy decreases risk of breast cancer

Lectins destroyed by cooking



Fruit

Aim for 3 servings of fruit + 1 serving berries daily

Berries decrease cancer and CV disease, increase immunity and improve liver and brain function

Increasing fruit in American diet biggest opportunity according to a 2010 study

Cruciferous Vegetables

Broccoli, Cauliflower, Brussel Sprouts, Kale, Bok choy, Cabbage, Arugula

Aim for at least 1 serving / day

Chemical sulforaphane reduces inflammation and cancer risk, boosts liver detoxification



Greens, Vegetables (+ Mushrooms)

| | |
|--------------|---|
| Leafy Greens | Dark leafy greens: high source minerals (calcium, magnesium, iron), vitamins, fiber. Aim for 1 serving per day. |
| Plus 3 More | Aim for 3 other veggie or mushroom servings per day |
| Mix & Match | Mix and match veggies over a week to diversify portfolio and maximize cancer protection. Eat mix of raw and cooked. |





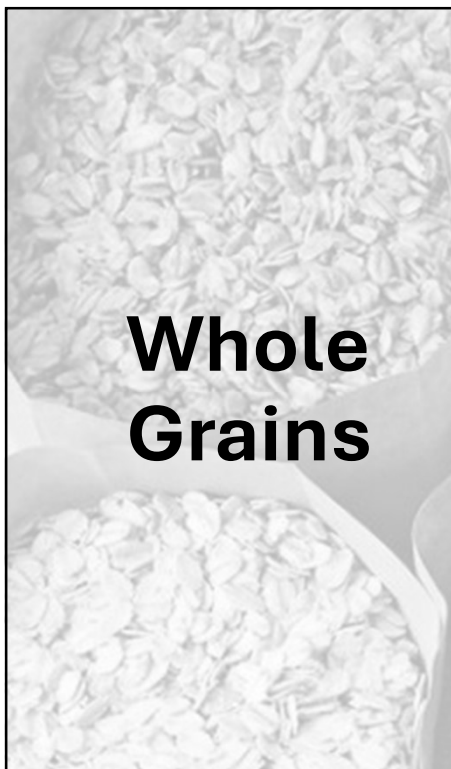
Seeds and Nuts

Aim for 1 serving/day plus 1 serving flaxseed per day.
High in fiber and poly-unsaturated fatty acids (PUFAs.)

Global Burden of Disease study: Insufficient nuts/seeds were 3rd leading dietary risk factor for death and disability worldwide

Walnuts have highest omega-3. PREDIMED study showed 50% reduction in cancer death if >3 serves/wk

Despite high caloric density, nuts and seeds associated with weight loss



Whole Grains

Aim for 3 servings per day; whole INTACT grains preferred

Barley, oats, farro, brown or wild rice, wheat berry, buckwheat, bulgur, millet and pseudograins

High in protein, fiber, nutrients, and antioxidants

Whole grains associated with decrease inflammation, heart disease, diabetes, obesity, stroke

Can increase resistant starches by eating cooled or cooling and reheating

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Diet Pattern: Mediterranean

What's Encouraged

- Olive oil as main source of fat
- 3-9 servings of vegetables
- 0.5-2 servings of whole fruit
- 1-13 servings of cereals, whole grains & legumes
- Moderate intake of:
 - ✓ Red wine Fermented dairy
 - ✓ Seafood Eggs
 - ✓ Poultry Nuts & seeds

What to Limit

- Red meat
- Ultra-processed carbohydrates & meats
- Saturated fats



Diet Pattern: DASH



What's Encouraged

- Vegetables, fruits, and whole grains
- Fat-free or low-fat dairy products
- Fish, poultry, and lean meats
- Nuts, seeds, and legumes
- Fiber and the minerals calcium, potassium, & magnesium

What to Limit

- Sodium: 1,500-2,300 mg per day
- Total fat: ~27% of total daily calories
- Saturated fat: < 6% of total daily calories
- Cholesterol: < 150 mg per day for a 2,100-calorie eating plan
- Red and processed meats
- Sugar-sweetened beverages & foods with added sugars

Intermittent Fasting

Potential Advantages

- Reducing “decision fatigue” regarding food selection
- Quickly reversible
- May better fit in day-to-day patient scheduling
- May reduce caloric intake with variable effects on lean body mass, resting metabolic rate, and total energy expenditure, often dependent upon physical activity
- May reduce body weight and improve metabolic parameters (i.e., improve insulin sensitivity, blood pressure, lipids, and inflammatory markers)



Potential Disadvantages

- Does not necessarily emphasize healthful meal quality
- May not be appropriate for patients with eating disorders (e.g., bulimia or binge-eating disorder)
- Increases the risk of hypoglycemia among patients with diabetes mellitus who do not appropriately adjust their hypoglycemic anti-diabetes drug treatments
- Unclear if sustainable lifelong
- Most long-term evidence of efficacy, health benefits, and safety derived from animal studies
- Prolonged fasting (not intermittent fasting) may promote gout, urate nephrolithiasis, postural hypotension, and cardiac dysrhythmias.

Clinical Case

HPI

- 61-year-old man with a BMI of 39.2, hypertension, dyslipidemia, HFpEF, coronary artery disease s/p PCI in s/o recent myocardial infarction, type 2 diabetes, peripheral neuropathy, knee osteoarthritis and depression presents to clinic for hospital follow up.
- He works third shift as a hotel auditor. He snacks frequently and passes time watching TV. He met with a dietitian during his hospitalization and complains he “can’t eat anything” due to his “water, sodium, and sugar restrictions.”

Medications

- Rosuvastatin, Losartan, Metoprolol, Aspirin, Plavix, Metformin, Glipizide, Gabapentin, Escitalopram, Tylenol

Insurance

- Commercial (Non-Medicaid/Medicare)



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Lifestyle Medicine Approach to Patient Care

1. Identify purpose
2. Outline goals
3. Assess current lifestyle
4. Co-create an action plan to focus on 1-2 areas at a time
5. Review progress towards goals and identify barriers

Source: American College of Lifestyle Medicine

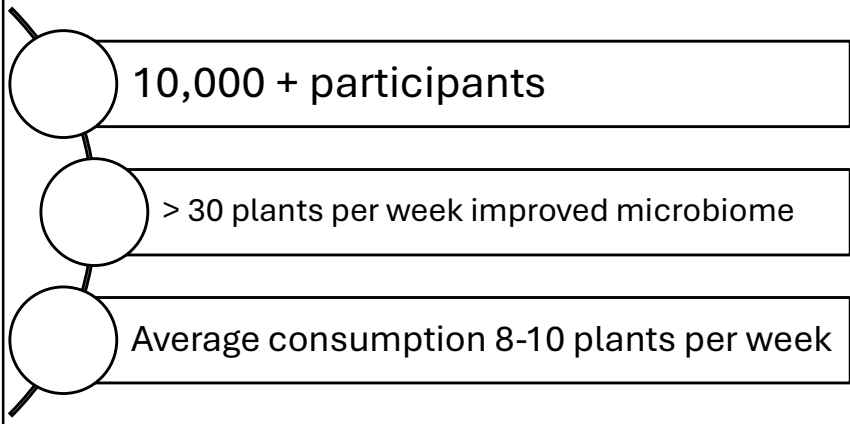
Dr. Greger's Daily Dozen

[HTTPS://NUTRITIONFACTS.ORG/VIDEO/DR-GREGERS-DAILY-DOZEN-CHECKLIST-2/](https://nutritionfacts.org/video/dr-gregers-daily-dozen-checklist-2/)

| | | | |
|---|--|---|---|
| <p>Beans Servings: 3 per day</p> <p>e.g. ½ c. cooked beans, ¼ c. hummus</p> | <p>Berries Servings: 1 per day</p> <p>e.g. ½ c. fresh or frozen, ¼ c. dried</p> | <p>Other Fruits Servings: 3 per day</p> <p>e.g. 1 medium fruit, ¼ c. dried fruit</p> | <p>Cruciferous Vegetables Servings: 1 per day</p> <p>e.g. ½ c. chopped, 1 tbsp horseradish</p> |
| <p>Greens Servings: 2 per day</p> <p>e.g. 1 c. raw, ½ c. cooked</p> | <p>Other Vegetables Servings: 2 per day</p> <p>e.g. ½ c. nonleafy vegetables</p> | <p>Flaxseed Servings: 1 per day</p> <p>e.g. 1 tbsp ground</p> | <p>Nuts and Seeds Servings: 1 per day</p> <p>e.g. ¼ c. nuts, 2 tbsp nut butter</p> |
| <p>Herbs and Spices Servings: 1 per day</p> <p>e.g. ¼ tsp turmeric</p> | <p>Whole Grains Servings: 3 per day</p> <p>e.g. ½ c. hot cereal, 1 slice of bread</p> | <p>Beverages Servings: 60 oz per day</p> <p>e.g. Water, green tea, hibiscus tea</p> | <p>Exercise Servings: Once per day</p> <p>e.g. 90 min. moderate or 40 min. vigorous</p> |
| <p>Vitamin B12</p> <p style="font-size: 0.8em;">At least 2,000 mcg (µg) cyanocobalamin once each week (or at least 50 mcg daily), ideally as a chewable, sublingual, or liquid supplement taken on an empty stomach.</p> | | | |

The Power of Plants

American Gut Project (2018)



COUNT YOUR UNIQUE PLANTS PER WEEK! GOAL: _____ ACTUAL: _____ DATE: _____

FRUITS

- Apples
- Apricot
- Avocado
- Bananas
- Blackberries
- Blueberries
- Cantaloupe
- Cherries
- Clementines
- Cranberries
- Dates
- Figs
- Grapefruit
- Grapes/Raisins
- Kiwi
- Lemons/limes
- Mangoes
- Nectarine
- Oranges
- Mangoes
- Pineapples
- Kiwi
- Papaya
- Peaches
- Pear
- Pineapple
- Plums / prunes
- Pomegranata
- Raspberries
- Strawberries
- Watermelon
- Other_____

VEGETABLES

- Artichoke
- Arugula
- Asparagus
- Beets
- Bell peppers
- Broccoli
- Brussels sprouts
- Cabbage
- Carrots
- Cauliflower

- Celery
- Collard greens
- Cucumbers
- Eggplant
- Fennel
- Green beans
- Hot peppers
- Iicama
- Kale
- Lettuce
- Mushrooms
- Onion
- Olives
- Parsnips
- Potatoes
- Pumpkin
- Radishes
- Spinach
- Squash
- Sweet potatoes
- Swiss chard
- Tomatoes
- Zucchini
- Other_____

NUTS/SEEDS

- Almonds
- Brazil nuts
- Cashews
- Chia seeds
- Coconut
- Flaxseeds
- Hazelnuts
- Hemp seeds
- Macadamia nuts
- Peanuts
- Pecans
- Pine nuts
- Pistachios
- Pumpkin seeds
- Sesame seeds
- Sunflower seeds
- Walnuts
- Other_____

WHOLE GRAINS

- Amaranth
- Barley
- Brown rice
- Buckwheat
- Bulgur
- Corn / popcorn
- Farn
- Millet
- Oats
- Quinoa
- Rye
- Whole wheat
- Wild rice
- Other_____

LEGUMES

- Black beans
- Cannellini beans
- Chickpeas / Garbanzo
- Edamame
- Kidney beans
- Lentils
- Lima beans
- Mung beans
- Navy beans
- Peas
- Pinto beans
- Soybeans
- Other_____

HERBS/SPICES

- Basil
- Cilantro
- Garlic
- Dill
- Ginger
- Mint
- Oregano
- Parsley
- Rosemary
- Thyme
- Turmeric
- Other_____



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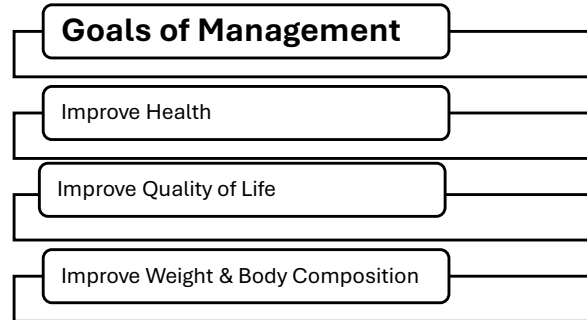
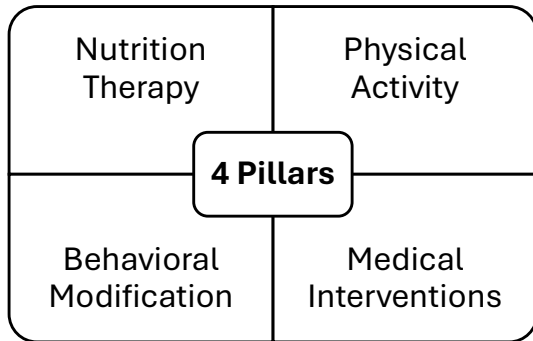
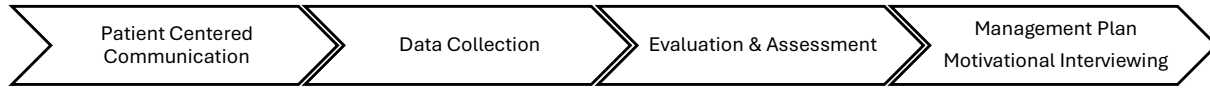
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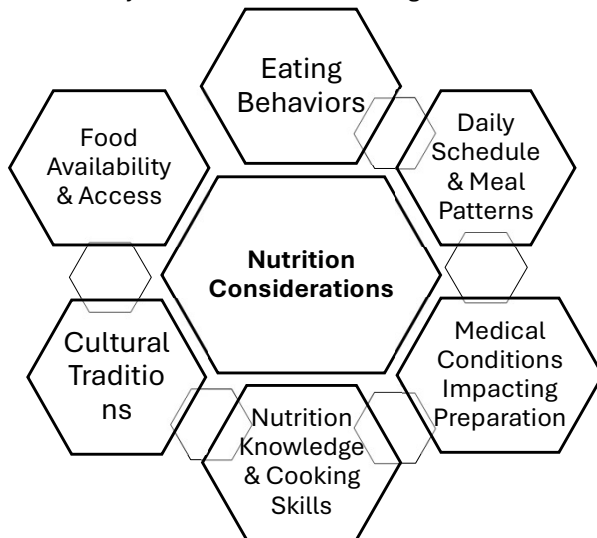
Obesity Medicine Approach to Patient Care

“Obesity is a chronic, progressive, relapsing & treatable multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction & abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical & psychosocial health consequences.”



“The most appropriate nutritional therapy for weight loss is one that is **safe, effective** and **to which the patient will adhere.**”

Obesity Medicine Association Algorithm 2024



| Keep it simple: PFF | | Highest Fiber Choices | Protein Choices | Fat Choices | Lower Fiber Choices |
|----------------------------|--|--|---|---|--|
| Protein | <ul style="list-style-type: none"> • Single Serve Greek Yogurt | FIRST Non-Starchy Vegetables Artichoke Asparagus Bell pepper Broccoli Brussel sprouts Cabbage Cauliflower Celery Collard Greens Cucumber Eggplant Fennel Green beans Kale Leek Lettuce Mushrooms Okra Onion Radishes Snow peas Spaghetti squash Spinach Sprouts Sugar Snap Peas Tomatoes Yellow Squash Zucchini | SECOND Plant Proteins Black beans Edamame Lentils Marine Collagen Powder Pinto Beans Protein Bar Protein Shake Tempeh Tofu Animal Proteins Beef Chicken Clams Collagen Powder Cottage Cheese (NF/LF) Eggs/Egg whites Fish Greek Yogurt (NF/LF) Lamb Lobster Mussels Oysters Pork Prawns Scallops Shrimp String Cheese (LF) Turkey | SECOND Plant Fats Avocado Chia seeds Coconut milk Cooking Oil Flax seeds Hemp hearts Hummus Mayonnaise Nuts or Nut Butter Olives Pumpkin seeds Salad dressing Sunflower seeds Tahini Animal Fats Bacon Butter Cheese Cream cheese Cream or Half & Half Ghee Salami Sausage Sour cream | LAST OR WITH PROTEIN/FAT Starchy Vegetables Acorn or Butternut Squash Beets Carrots Corn Parsnips Regular or Sweet Potato Turnips Whole Grains Farro Oats Quinoa Whole wheat Bread/Wrap/Pita Whole Wheat/Legume Pasta Wild or Brown Rice Fruit Apples Apricot Banana Berries Cantaloupe Cherries Figs Grapefruit Grapes Honeydew Kiwi Mango Nectarine Orange/Tangerine Papaya Peach Pear Pineapple Plum Watermelon |
| Fat | <ul style="list-style-type: none"> • 100 kcal nut pack | | | | |
| Fiber | <ul style="list-style-type: none"> • Psyllium Husk • Apple | | | | |
| | | If you do not like vegetables... Try a psyllium husk supplement either in capsule or powder form | LF = Low Fat NF = Non-Fat | | |

Lifestyle & Obesity Medicine Resources

American College of Lifestyle Medicine

- lifestylemedicine.org

Obesity Medicine Association / The Obesity Society

- obesitymedicine.org
- obesity.org

Clinician and Patient Resources

- fullplateliving.org
- nutritionfacts.org
- *Obesity: A Disease Podcast*