



CATHOLIC MEDICAL CENTER

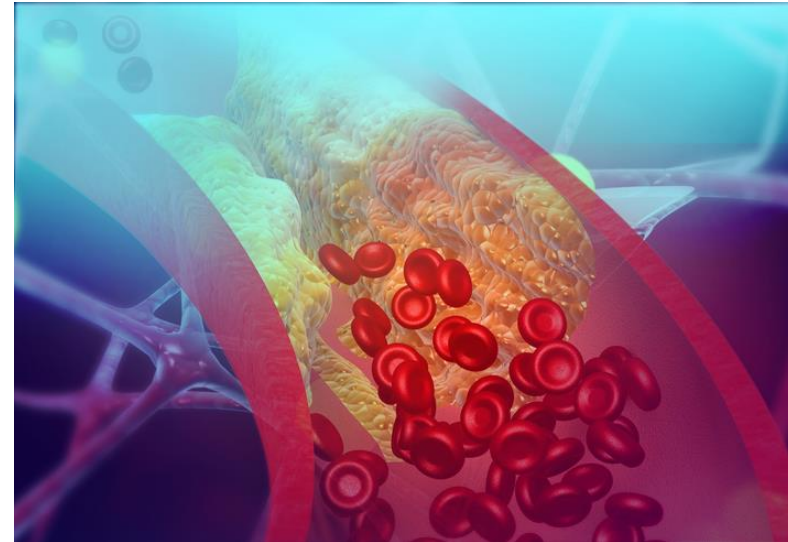
**New England Heart
& Vascular Institute**

Cardiovascular Wellness

Understanding Cholesterol & Nutrition

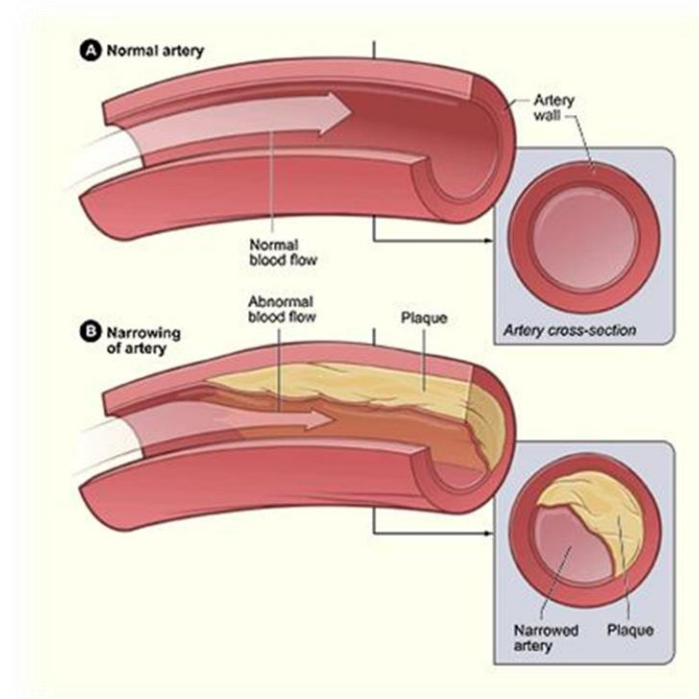
What is cholesterol?

- Waxy substance
- Essential part of all cells:
 - Helps form certain hormones, vitamin D and digestion
- Main sources:
 - Mostly animal products
- The liver makes the cholesterol body needs
- Too much trans and saturated fat in the diet can increase blood cholesterol



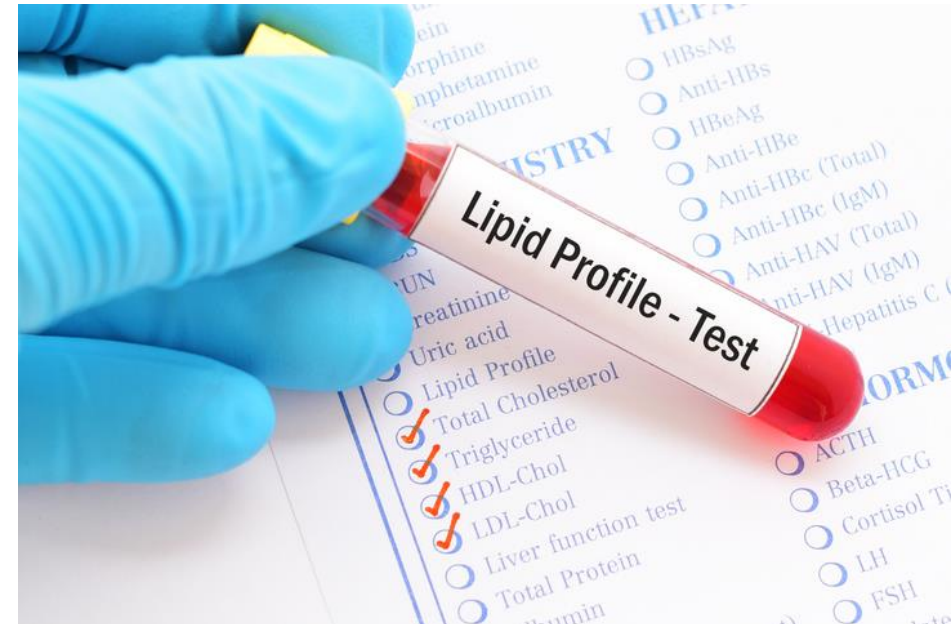
Cholesterol and plaque

- Plaque in arteries can lead to coronary artery disease
- Plaque = calcium, cholesterol, fat and other substances
- Cholesterol travels in packages called lipoproteins
- Two types = high density (HDL) and low density (LDL) lipoproteins



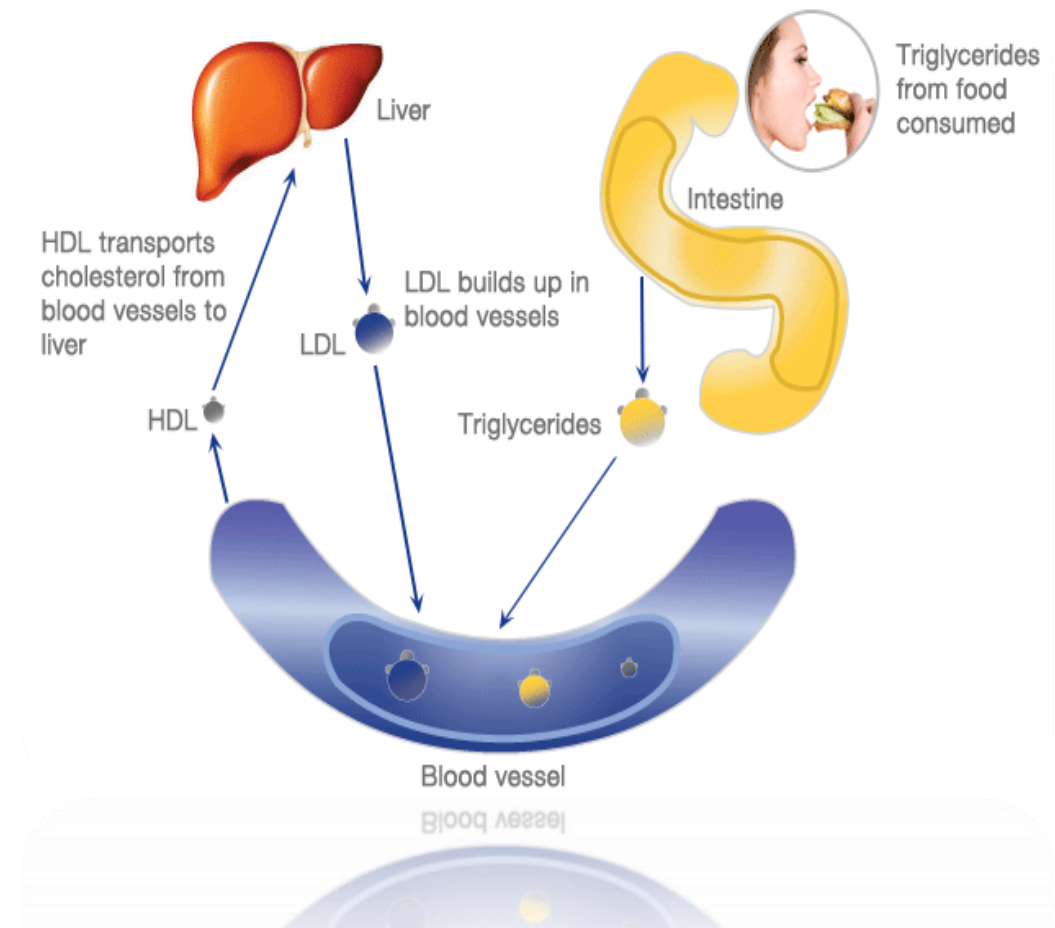
Blood lipid (cholesterol) panel

- HDL: “happy” or “good” = carry cholesterol from other parts of body to liver for elimination
- HDL: men ≥ 45 mg/dl and women ≥ 50 mg/dl
- LDL: “lousy” or “bad” = carriers of cholesterol to the arteries and can contribute to build up; **higher LDL can raise** risk of heart disease
- LDL: main focus for treatment of statin meds;
goal= < 70 mg/dl (nationally);
<50 mg/dl (CMC cardiology)



Triglycerides

- Most common form of fat in blood
 - used to provide energy
- Excess stored in cells and released into blood
- High levels impacted by **↑** fats, carbs (sweets, alcohol, bread, pasta)
- **↑** Blood sugars= can **↑** triglycerides
- **↑** Triglycerides with **↓** HDL &/ or **↑** LDL increases the risk for heart attack/stroke
- Goal: ≤ 100 mg/dl



Additional cholesterol information

- **Total cholesterol** score is calculated using the following equation:
HDL + LDL + 20 percent of your triglyceride level.

Example:

$$\begin{array}{rcccccc} \text{HDL} & + & \text{LDL} & + & \text{Triglycerides (20\%)} & = & \text{Total Cholesterol} \\ 50 & + & 150 & + & 200 & (20\%) \text{ or } 40 & = & 240 \end{array}$$

- Non-HDL is used as another indicator of risk for heart disease; sometimes believed to provide more info than LDL's; associated with triglycerides.

$$\text{TOTAL CHOL} - \text{HDL} = \text{NON-HDL} \quad (30 \text{ mg/dl above LDL})$$

- Ideal: <100 mg/dl (if heart disease or at high risk for heart disease)

Central obesity—waist circumference

- Another risk factor indicator
- Risk of heart disease and diabetes
- Use in combination with Body Mass Index (BMI)
- Women: <35 inches
- Men: <40 inches
- Goal is to reduce during cardiac rehab



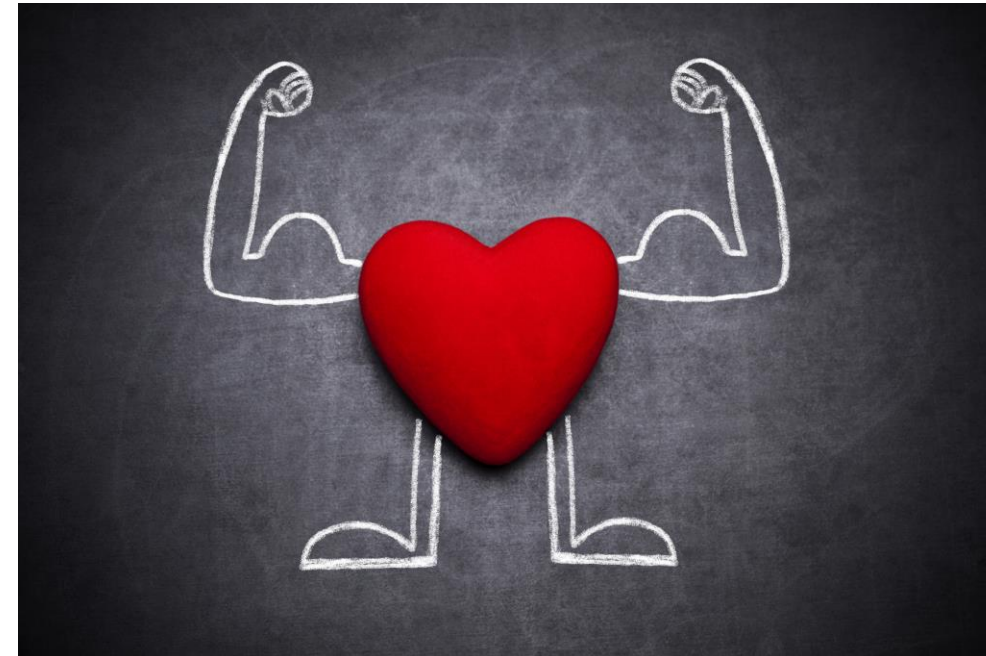
What impacts blood cholesterol?

You can modify:

- Stress
- Exercise
- Smoking
- Weight
- Diet
- Elevated Blood Sugars

Cannot modify:

- Genetics
- Age
- Gender



Dietary fats: healthy vs unhealthy

Healthy Fats

1. Monounsaturated
2. Polyunsaturated
(Omega 3)

Unhealthy Fats

1. Saturated
2. Trans
(hydrogenated oils)

The key is to REPLACE BAD fats with GOOD fats.

Monounsaturated fats

Lowers LDL and may raise HDL

- Olive oil
- Canola oil
- Avocados
- Natural Peanut Butter
- Peanut oil
- Almonds
- Walnuts
- Cashews
- Most other nuts
- Nut Butters

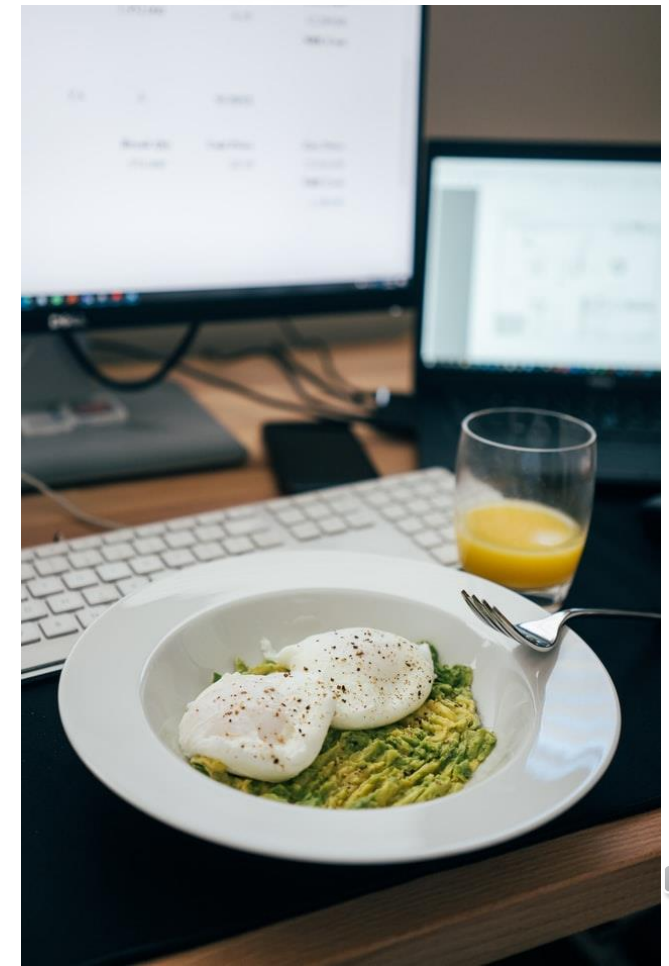


Polyunsaturated fats

Lowers LDL and may raise HDL

Is effective especially when replacing saturated or trans fats with polyunsaturated fats

- Corn oil
- Eggs
- Soybean oil, tofu
- Safflower oil
- Sunflower oil, seeds
- Fatty Fish

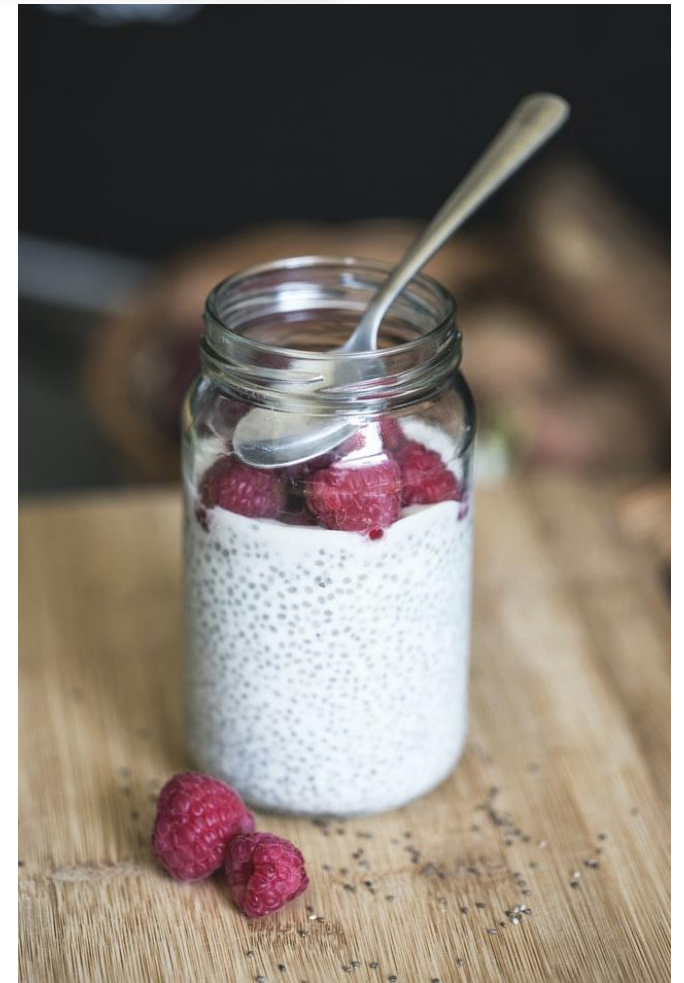


Omega 3's

Omega 3's may:

- *Decrease risk of arrhythmias (abnormal heartbeats)*
- *Decrease triglyceride levels*
- *Slow growth rate of atherosclerotic plaque*
- *Lower blood pressure*

- Salmon, Mackerel, Trout, Herring, Tuna, Sardines, Blue fish
- Ground Flaxseed
- Expeller Pressed Canola Oil
- Soy Foods
- Walnuts
- Chia Seeds



Saturated fats

Increases LDL Cholesterol

Average saturated fat 10-13 grams (5-6% total calories)

- Red meat, most meat
- Processed foods
- Cream, cheese, whole milk, ice cream
- Butter
- Palm and Palm Kernel Oils
- Coconut Oil



Saturated fat content of foods

FOOD	Saturated Fat (grams)
Butter – 1 TBSP	7.25 g
Butter, whipped, 1 TBSP	3.5g
Milk, 1 cup: Whole, 2 %, 1%, nonfat	5 g, 3g, 1.5g, 0g
Cheddar Cheese – 2 slices/2 oz	12 g
Provolone, 2 oz	9.6 g
Fat Free and Reduced Fat Feta, 2 oz	0g, 3 g
Ribeye Steak – 6 oz (10 oz)	17 g (28 g)
Pizza – 2 slices – Domino’s or Pizza Hut Pepperoni	10 g
Half & Half, Hood Light cream 2 TBSP	2g, 3.6 g
Coconut Oil – 1 TBSP	12 g
Olive Oil – 1 TBSP	2 g
Chic breast, no skin, 3 oz	Less than 1 g
Chic Wing, with skin 3 oz, 3 wings	5.4 g
Pork Loin, 3 oz	4.4 g



Trans Fats or Hydrogenated Fats

- Increases LDL cholesterol
- FDA requires manufacturers to list 0.5 grams trans fat or greater on label
- Fully hydrogenated oils don't contain trans fats but do contain saturated fat

Store bought bakery products, crackers, frozen foods, some peanut butter, bread crumbs, cookies, wraps



Sugar

- Studies indicate people consuming 22 tsp (335 calories) of added sugar or more had a 38% higher risk of dying from cardiovascular disease
- Contributed to higher cholesterol, blood pressure & obesity
- **Added sugar** = sugars added to foods/beverages
- **Examples:** candy, cakes cookies, pies, fruit punch, sports drinks, sweetened tea, lemonade, ice cream, sweetened yogurt, almond and flavored milk, cinnamon toast, flavored waffles, cereals, breads, bagels, English muffins, tomato sauce, kettle popcorn, sweetened nuts



* *Journal of American Medical Association*

Sugar recommendations

The American Heart Association recommends no more than:

- **6 teaspoons** or 100 calories a day of sugar for most women.
- **9 teaspoons** or 150 calories a day for most men.
- According to the study, most U.S. adults consume about: **22 teaspoons** of added sugars
- 1 teaspoon = 4 grams of sugar

**American Heart Association*



Sugar content of foods

FOOD	Teaspoons of Sugar
Cola, 12 oz can	9 ½
Arizona Iced Tea, 15 oz or 23 oz	12 or 18
Powerade, 20 oz or 32 oz	7.5 or 14
Milk, Nonfat, 8 oz	0
Pina Colada, 8 oz	14
Wine, Beer, Whiskey*	Less than 1 g
Jam or Preserves, Smuckers, 1 TBSP	3
Jam, Polaner, 1 TBSP	2
Honey, 1 TBSP**	4.25
Pure Maple Syrup, 1 TBSP**	3
Sugar, 1 TBSP	3
Stoneyfield Yogurt, 6 oz	5.25
Siggis Yogurt, 5.3 oz	2.25

*There is no added sugar. Sugar is occurring from alcohol but does contain calories and can increase triglycerides and decrease good cholesterol, HDL's. **Slower rise in blood sugars



Sugar content of foods

FOOD	Teaspoons of Sugar
Heinz Ketchup, 3 TBSP	3
Ragu, Chunky Tomato Garlic & Onion, ½ cup	3
Sweet Baby Ray's Chipotle BBQ Sce, 2 TBSP	4
Pepperidge Farms, Cinn Swirl Bread, 2 slices	2
Haagen Dazs Frozen Yogurt, ½ cup	6
Fruit Loops, 1 cup	5
Cheerios, 1 cup	Less than 1
Raisin Bran Crunch, 1 cup	5 (includes raisins)
Oatmeal, Maple, Instant, 1 pkt	3
Steel Cut Oats, ½ cup	0
Milky Way Bar	9
Three Musketeers Bar	10
Hersheys with Almond Bar	4.5



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Sugar substitutes & sweeteners

- Sweeteners not proven to cause cancer/diseases in humans
- FDA established safe acceptable daily intake (ADI) consumed in a lifetime; Generally recognized as safe (GRAS)
- ADI is listed in units of milligram (mg) per kilogram (kg) of body weight; based on 150 lb person
- Some studies indicate no weight loss and increase in blood sugar with large amount of sweeteners
- Can change bacteria in gut which can lead to obesity and weight gain



Sugar substitutes & sweeteners

- **Acesulfame Potassium (Ace K), also known as Sweet One and Sunett** 200 times sweeter; Can be used for baking and cooking.
- **Aspartame, also known as Equal, NutraSweet, and NatraTaste** 160-200 times sweeter; Loses sweetness with longer cooking time. Not safe for people phenylketonuria (PKU) or migranes
- **Rebiana, also known as Truvia**
200 times sweeter than sugar; Good for baking; contains erythritol, rebaudioside A and “natural flavors.”
- **Saccharin, also known as Sweet 'N Low and SugarTwin**
300- 500 times sweeter; Can be used in cooking and baking
- **Sucralose, also known as Splenda**
600 times sweeter than sugar; May not work well in recipes such as cakes that rely upon sugar for structure
- **Neotame**
8000 times sweeter than table sugar
Is the newest on the market; this artificial sweetener was approved by the FDA in 2002; new food ingredient that delivers used as a sweetener and/or as a flavor enhancer; can be combined with other sweeteners
- **Stevia**
200 times sweeter than sugar; made from natural plant but then processed; depending on brand has sugar alcohol; not enough research; does not brown



Diabetes & Pre-diabetes

- Closely related to heart disease
- About 75% cardiac rehab patients have diabetes or pre-diabetes (*estimate*)
- Maintaining normal blood sugars
- Can lower risk of heart occurrences



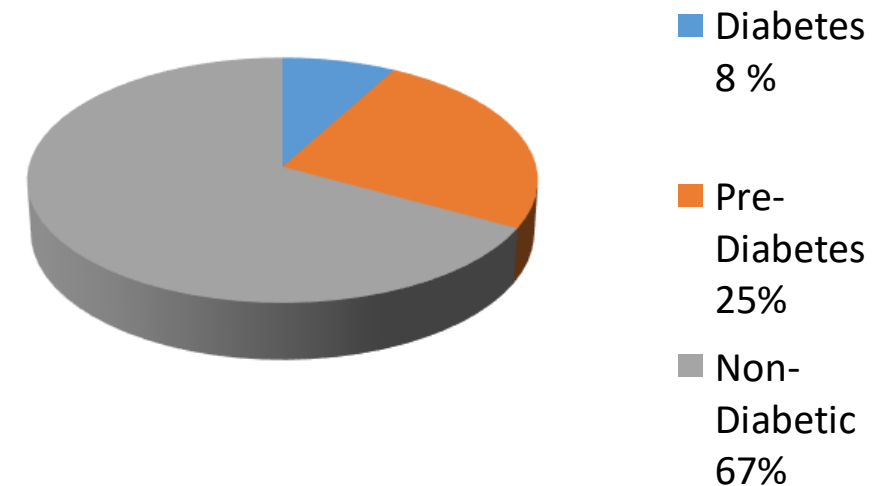
A few numbers

An estimated 25.8 million Americans have Diabetes predicted to rise to over 30 million Americans by the year 2030.

Approximately 79 million Americans have “Pre-Diabetes” (25% of population)

Estimates provided by U.S. Department of Health and Human Services, National Diabetes Fact Sheet, 2011

Diabetes Prevalence in the United States



Meal plan tips

Diabetes, Pre-Diabetes or Healthy Eating

- Eat 3-5 small meals/day
- Avoid waiting more than 4-5 hours
- Snacks at least 2 hours after meals
- Drink plenty of fluid (unless fluid restriction):
1 ounce water for every 4 pounds of weight;

Example: 160 lb person would drink 40 oz or five 8 oz cups

















Reduce weight

- Decrease “usual” portions
- Decreasing caloric intake by 100 calories/day = 10 lb wt loss/year
- 200 calories/day = 20 pounds
- 300 calories/day = 30 pounds



Portion sizes



Object	Hand Symbol	Equivalent	Foods
		Fist 1 Cup (baseball)	Rice, Pasta Fruit Veggies
		Palm 1/2 cup (tennis ball)	Medium Fruit, Ice Cream
		Palm 3 ounces (deck of cards)	Meat Fish Poultry
		Handful 1 ounce (1 large egg)	Nuts Raisins
		2 Handfuls 1 ounce (2 large eggs)	Chips Popcorn Pretzels
		Thumb 1 ounce (ping pong ball)	Peanut Butter Hard Cheese
		Thumb Tip 1 teaspoon (marble)	Cooking Oil Mayonnaise, Butter Sugar



Fiber

Recommendation = 21–38 GM Fiber/Day

- Rich in nutrients
- Benefits: lower cholesterol, weight management, digestive health, blood sugar control
- Two types:
 - **Soluble** (*oatmeal, Cheerios, beans, inside of fruit, ground flax seed*)
 - **Insoluble** (*whole wheat, whole corn, whole barley, outside of fruit*)
- Gradually add fiber and drink plenty of fluid



Vegetables and fruits

**Recommendation = 2–2 ½ cups vegs (4-5 servings)
1½–2 cups fruits (3-4 servings)**

- Rich in nutrients and fiber
- Raw or lightly cooked = most nutrition
- Leave skin = more nutrition
- Fruit or veg for every snack or meal
- Fruit: 3 servings per day (wt or blood sugar control)
- One serving = 1 piece fruit, ½ cup cooked veg or canned fruit, 1 cup fresh fruit or veg
- Start with 5 servings/day initially



Whole grains

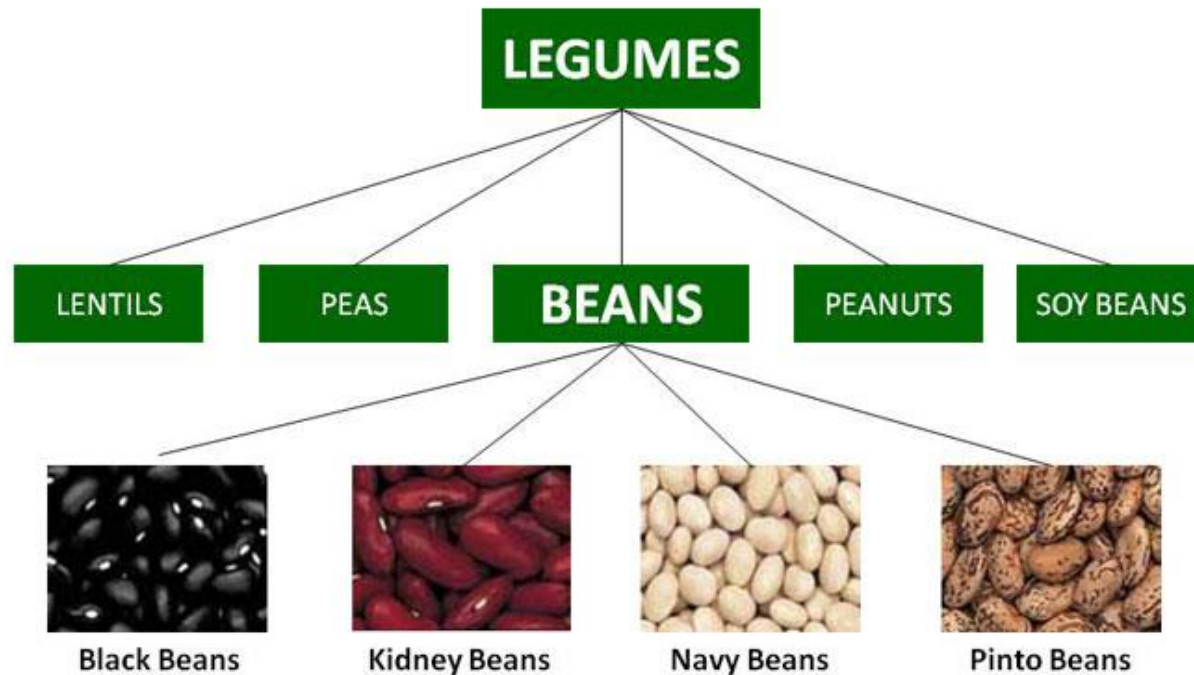
Choose whole grain foods instead of white or refined foods

- Ingredient should say the word **“WHOLE”**
not “ENRICHED or WHEAT FLOUR”
 - Whole wheat, whole corn, whole rye, whole oats, whole grain
 - Brown rice
 - Quinoa
 - Wheat berries
 - Barley
 - Examples: bread, crackers, pasta, rice, cereal



Legumes & beans

Beans are a member of the legume family.

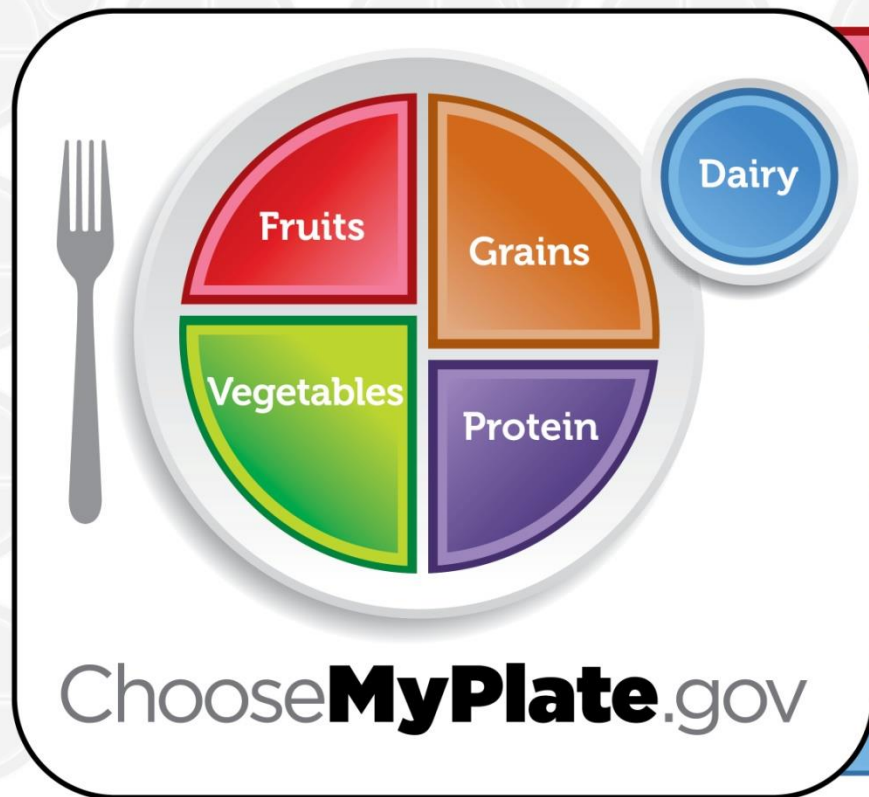


Legumes & beans

- Excellent source of fiber
- Eating beans 4 or more times per week = lower incidence of heart disease, weight loss and blood sugar control
- Dry, frozen or low sodium canned
- Rinsing and draining lowering sodium by 40%
- Use as meat replacement
- Add to salads, soups, wraps, dips, desserts



Plate balance



FOCUS ON FRUITS

Fruits may be fresh, canned, frozen, or dried, or 100% juice. Make half your plate fruits and vegetables.



VARY YOUR VEGETABLES

Include dark green, red, orange, beans and peas, starchy, and other varieties.



MAKE AT LEAST HALF YOUR GRAINS WHOLE

Eat more whole grains such as whole wheat, bulgur, oatmeal, whole cornmeal, and brown rice.



GO LEAN WITH PROTEIN

Choose from a variety of meat, poultry, seafood, beans and peas, eggs, soy foods like tofu, nuts and seeds.



GET YOUR CALCIUM RICH FOODS

Choose fat-free or low-fat milk, yogurt and cheese.



Live life's simple seven

1. Manage blood pressure
2. Control cholesterol
3. Reduce blood sugar
4. Get active
5. Eat better
6. Lose weight
7. Stop smoking





CMC

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& Vascular Institute**

Where
heart
meets
health.