TOP NUTRITION MYTHS

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Myth #1: HDL cholesterol is good and LDL cholesterol is bad

Lipid (Cholesterol) Panel (mg/dL):	**Optimal**	**Borderline**	**High Risk**
Total Cholesterol	<200mg/dL	200-239	240
Triglycerides	<150mg/dL	150-199	200
HDL	40mg/dL (male)	<40	
	50mg/dL (female)	<50	
LDL	<130mg/dL	130-159	160
Cholesterol/HDL ratio	4.0	5.0	6.0

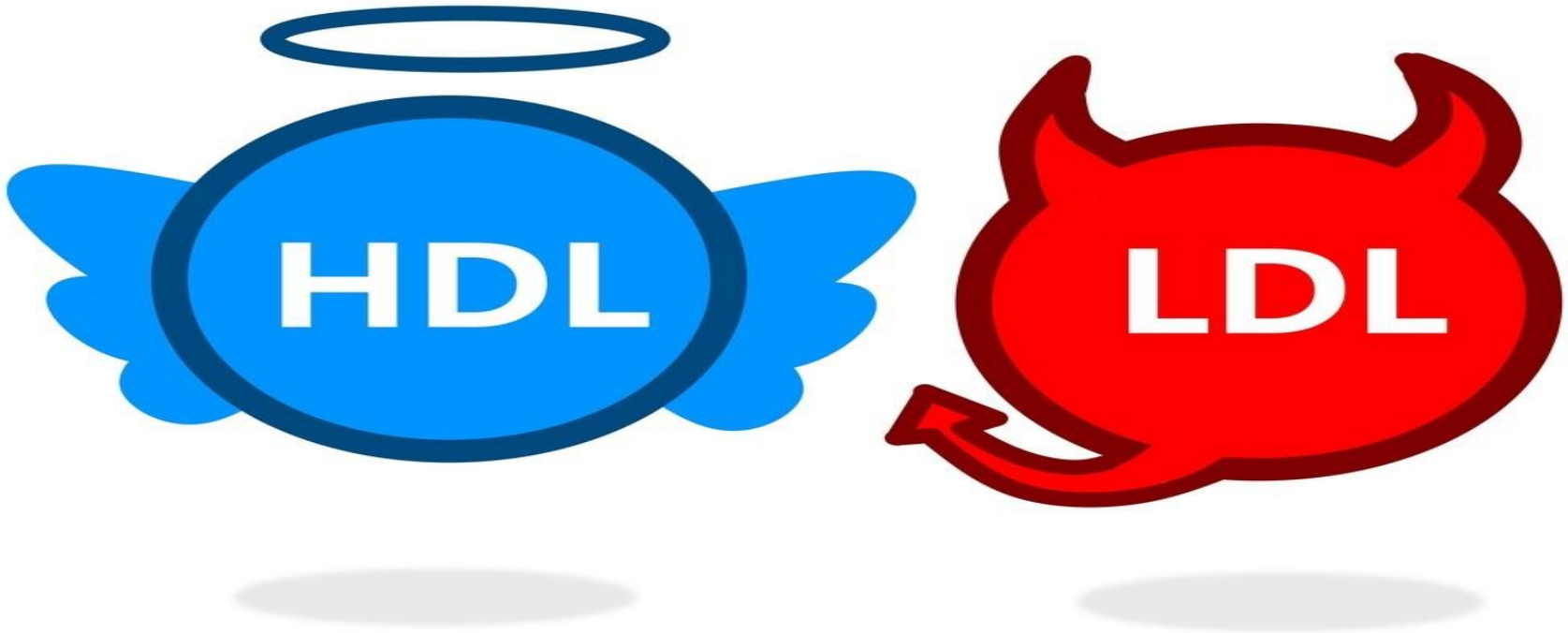
Vertical Auto Profile Test

THE VAP® TEST FROM ATHEROTECH®

Patient Name: PATIENT, TEST	Sex: F	Date Drawn 03/12/09
Account: TEST CLIENT	Age: 34	Date Tested: 03/12/09
Physician: Physician, Test	DOB: 10/01/1974	Accession: 6333743
Fasting Status: Fasting	Client No: CLIENTACN12345	Patient ID: 3173769

Direct-Measured Cholesterol Panel	Actual	Desirable	Risk (Low / High)	Description
Total LDL	**162**	<130 mg/dL	▼ High	$LDL_{4+3+2+1}$ + Lp(a) + IDL
$LDL_{4+3+2+1}$	128	<100 mg/dL	▼ Low	Total LDL minus Lp(a) and IDL
Lp(a)	15	<10 mg/dL	▼ High	More atherogenic than LDL
IDL	19	<20 mg/dL	▼ Low	More atherogenic than LDL
Total HDL	**56**	≥40 mg/dL	▼ Low	HDL_2 + HDL_3
HDL_2	13	>15 mg/dL	▼ High	Large Buoyant, more protective
HDL_3	43	>25 mg/dL	▼ Low	Small Dense, less protective
Total VLDL	**24**	<30 mg/dL	▼ Low	$VLDL_{1+2}$ + $VLDL_3$
$VLDL_{1+2}$	9.8	<20 mg/dL	▼ Low	Buoyant VLDL, less risk
$VLDL_3$	15	<10 mg/dL	▼ High	Dense VLDL, more risk
Total Cholesterol	**243**	<200 mg/dL	▼ High	LDL + HDL + VLDL

Myth # 1: HDL cholesterol is good, LDL cholesterol is bad



Myth # 1: HDL cholesterol is good and LDL cholesterol is bad

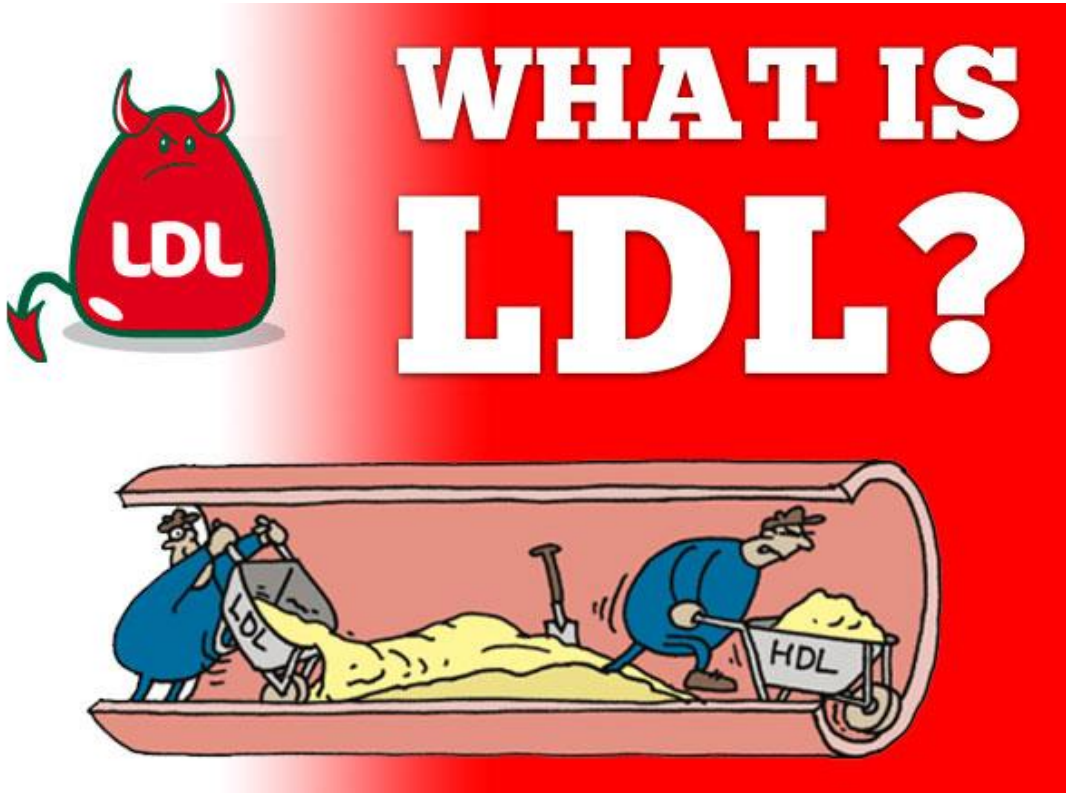
- HDL- High Density Lipoprotein
- At least 5 different forms
- Transports cholesterol, triglycerides, and phospholipids back to liver
- Contains proteins that are antimicrobial
- Binds bacterial endotoxins

(LPS-lipopolysaccharides)

- Contains an enzyme (paraoxonase) which lowers the chance of oxidation

Myth # 1: HDL cholesterol is good and LDL cholesterol is bad

- LDL- Low density lipoprotein
- At least 3 different forms
- Transports cholesterol, fats, and fat soluble vitamins from liver to body
- Contains proteins that are antimicrobial (less than HDL)
- Binds bacterial endotoxins (LPS)
- More susceptible to oxidation



Prevent LDL oxidation (damage)

1. Lower free cholesterol to increase LDL receptor sensitivity especially in the liver
    a. fiber intake: binds to bile acids
    b. statins: lowers production of cholesterol in liver
    c. polyunsaturated fat intake: binds to cholesterol
2. Optimal thyroid status
3. Maintain optimal blood insulin levels
4. Control Inflammation
5. Staying active

MYTH #2: Dietary Cholesterol is Harmful

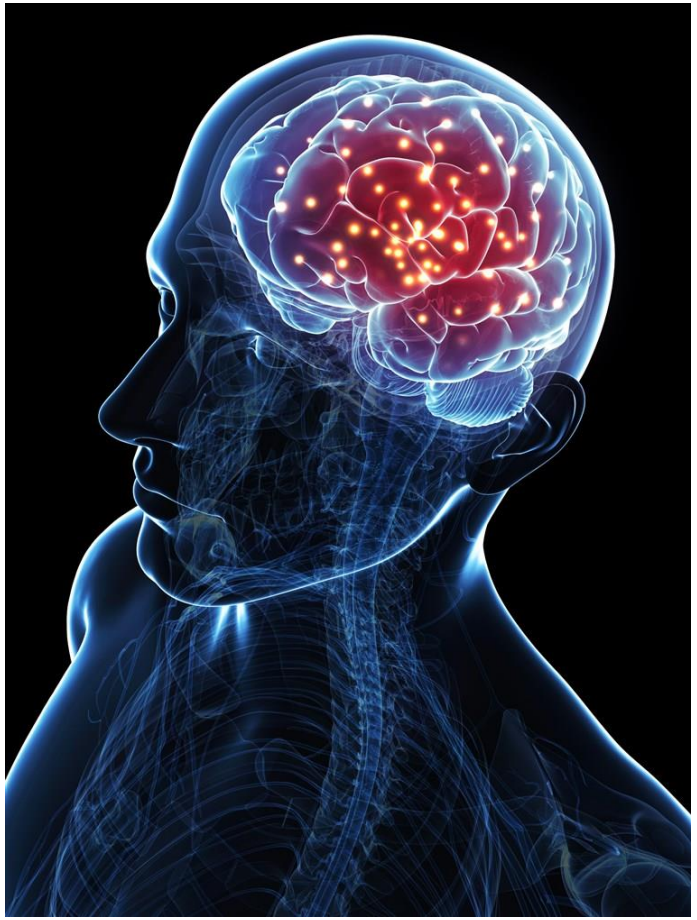
- Scientific Report of the 2015 Dietary Guidelines Advisory Committee:
  "Previously, the Dietary Guidelines for Americans recommended that cholesterol intake be limited to no more than 300 mg/day. The 2015 DGAC will not bring forward this recommendation because available evidence shows no appreciable relationship between consumption of dietary cholesterol and serum (blood) cholesterol, consistent with the AHA/ACC (American Heart Association / American College of Cardiology) report.
  Cholesterol is not a nutrient of concern for overconsumption."

Why is Cholesterol Important

- Made by almost every cell in the body
- Makes cells “waterproof” and gives cell membranes the shape
- Helps liver make bile acids
- Major repair molecule
- Needed to make vitamin D
- Needed to make adrenal and sex hormones
- An potent anti-oxidant
- Important to the nervous system. Make up 25% of the brain’s total weight

Myth #2: Dietary cholesterol is harmful

- Tends to raise HDL and LDL
- Tends to make LDL large and fluffy
- Around 75% of people would have no issue with intake
- Those with familial hypercholesterolemia need to use caution (<1% of population)
- Around 1-3% of population have issues with cholesterol synthesis and may need to increase intake



Myth #3: Saturated fat causes Heart disease

- There's a lot of conflicting information about saturated fats. Should I eat them or not?
- The American Heart Association recommends limiting saturated fats – which are found in butter, cheese, red meat and other animal-based foods. Decades of sound science has proven it can raise your "bad" cholesterol and put you at higher risk for heart disease.
- The more important thing to remember is the overall dietary picture. Saturated fats are just one piece of the puzzle. In general, you can't go wrong eating more fruits, vegetables, whole grains and fewer calories.
- When you hear about the latest "diet of the day" or a new or odd-sounding theory about food, consider the source. The American Heart Association makes dietary recommendations only after carefully considering the latest scientific evidence.

Source: (*www.heart.org)*

Types of Dietary Fat

- **Polyunsaturated Fat**

*omega 3 fat

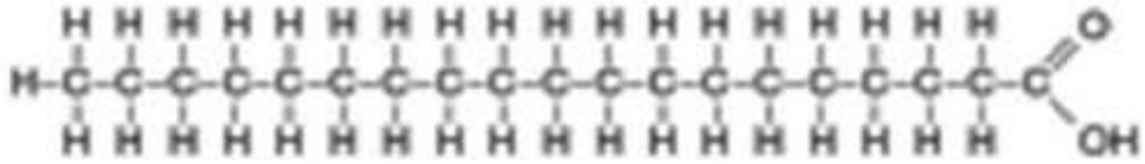
*omega 6 fat

- **Monounsaturated Fat**

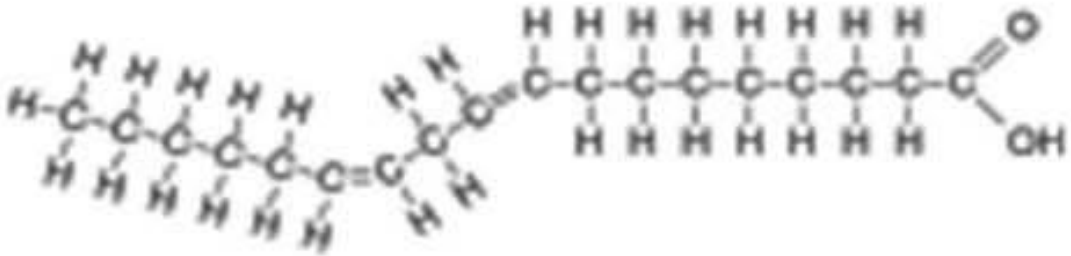
*omega 9 fat

- **Saturated Fat**
- **Trans (Transformed) Fat**

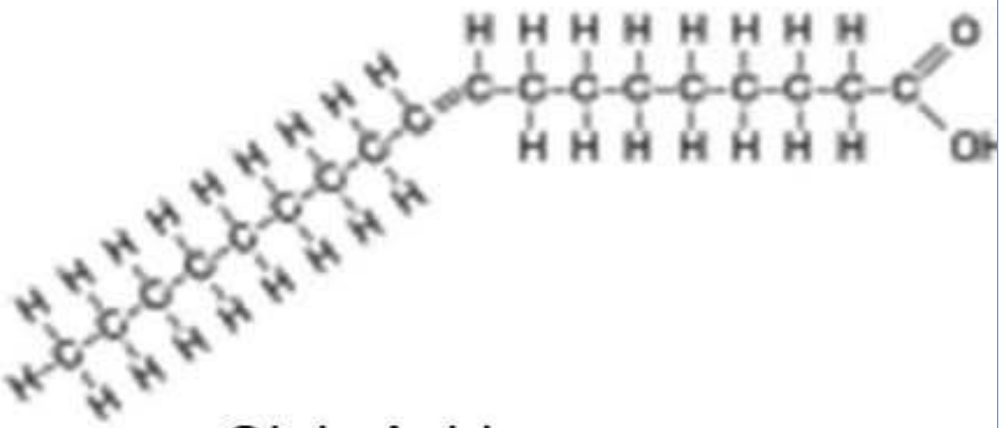
Differences in Fat Structure



Stearic Acid (saturated fatty acid)



Linoleic Acid (polyunsaturated fatty acid)



Oleic Acid
(monounsaturated fatty acid)

Truths about Polyunsaturated Fats

- Two kinds: omega 6 and omega 3
- Omega 6 and omega 3 have opposite functions and need to be balanced in close to equal amounts, e.g., omega 6's increase inflammation, omega 3's decrease inflammation
- Essential- We have a need for them, but are unable to make them (~3% of total calories?)
- The least stable fats- unstable when exposed to heat, light, oxygen, toxins (easily oxidized)
- Increase in intake after World War II due to promotion of grain and seed oils
- Mostly used in processed foods and by restaurants
- Recommendations are to decrease consumption of grain and seed oils and incorporate more longer chained omega 3 fats from fatty fish and pastured animal products

Truths about Monounsaturated Fats

- Not essential
- Provides energy and cell structure
- Basically neutral on cholesterol
- Some are anti-microbial

(Palmitoleic acid)

Truths about Saturated Fats

- Resistant to oxidation
- Makes LDL large and buoyant
- Raises HDL
- Along with monounsaturated fats, saturated fats are great at increasing absorption of fat soluble anti-oxidants like carotenoids
- The saturated fat butyric acid (butter) has numerous benefits in colon health
- Several saturated fats are potent anti-microbial

    lauric acid

    caprylic acid

    caproic acid

    capric acid

MYTH #3: Saturated Fat Causes heart Disease

- Comment by Dr. Darius Mozaffarian, M.D. of Harvard School of Medicine in Journal of American Dietetic Association

"Although the paradigm that saturated fat is a major cause of CHD has become entrenched in the public and scientific consciousness over decades, modern nutritional evidence does not support a major effect of saturated fat on heart disease."

MYTH #4: Calcium Is The Most Important Thing To Build Strong Bones

- Exercise is by far the most important thing to build strong bones. (Wolff's Law)
- Numerous minerals makeup bone: calcium, phosphorus, magnesium, boron, sodium, chloride, strontium, etc.
- Vitamin's D and K2 regulate mineral uptake in bone

How To Build Strong Bones

- Exercise, especially weight bearing
- Adequate Vitamin D- get tested, ideal levels will be ~50ng/mL. Obtain through sunlight or supplementation (cod liver oil or Vitamin D3)
- Vitamin K2- produced through bacterial fermentation in our guts and in the process of cheese making and a soy based product called natto. Edam and Gouda are rich sources. K1 is in leafy greens. Be careful supplementing if on blood thinners. Supplementing 200mcg/day.
- Magnesium- 80% of population deficient. Influences osteoblasts and osteoclasts, parathyroid hormone and active form of vitamin D (calcitriol). Strive for 1:1 ratio of magnesium to calcium.
- Balance Calcium and Phosphorus

MYTH #5: Red Meat Causes Cancer

MYTH #4: Red Meat Causes Cancer

- October 2015, The World Health Organization classified red meat as a class 2a(probable) carcinogen.
- Conclusion from 300 nutrition studies reviewed by advisory board.

(Meta-analysis study)

- Conclusion from one study stated, *"Collinearity between red meat intake and other dietary factors (e.g. Western lifestyle, high intake of refined sugars and alcohol, low intake of fruits, vegetables and fibre) and behavioural factors (e.g. low physical activity, high smoking prevalence, high body mass index) limit the ability to analytically isolate the independent effects of red meat consumption".*
- Numerous studies show Americans with a high intake of red meat also do not exercise regularly, are more likely to smoke and drink, be overweight, eat less fruits and vegetables, and have poor sleep habits.
- Most Americans eat red meat on a white bun with french fries and a soft drink.
- *High iron intake and over cooking could be a problem.*

MYTH #6: Eat Small Frequent Meals To Lose Weight.

- Most often cited study to back up claim is a 1989 study in New England Journal of Medicine.
- Study compared eating 3 times/day to 17 times/day.
- Conclusion showed 17 meal/day people had slightly lower insulin but no other statistical differences were found.
- Calories are the most important variable to consider with weight loss according to the research.
- Small frequent meals are useful for those with adrenal issues and severe low blood sugar

Myth #7: Low_____ Foods are Healthier Than Their Regular Counterparts

- Fat, salt(sodium), sugar are the three primary flavor enhancers in food.
- If one is removed one of the others if not both will usually be added.(Dairy is a possible exception)
- The introduction of these foods began in the mid 1980's prior to the increased rates of obesity and diabetes.

MYTH #8: Whole Grains Are Heart Healthy

- Based on the premise that fiber in grains MAY lower cholesterol.
- Grains have to be processed to be put into an edible form.
- Processing removes most nutritional value which is why they are usually fortified.
- High carbohydrate diets for sedentary individuals can contribute to diabetes which increases the risk for heart disease.

MYTH #8: High Protein Intake Causes Bone Loss

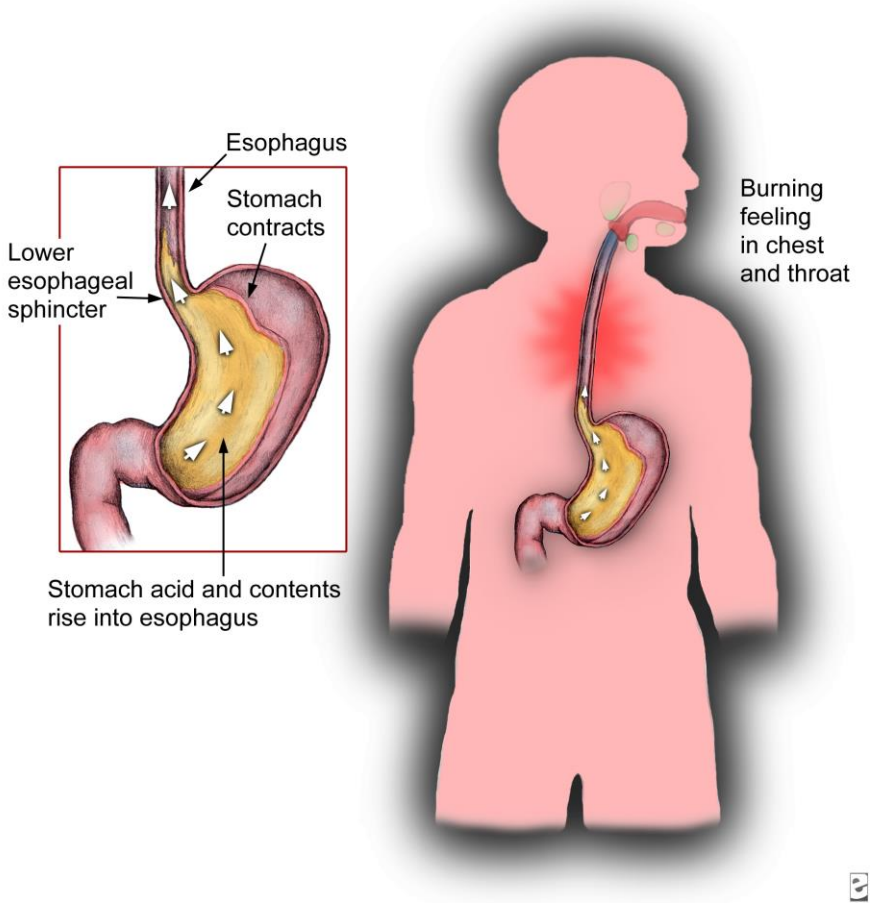
- Studies in the 1970's showed increased calcium loss in the urine with higher protein intakes.
- Subsequent studies showed the same, but also showed higher intestinal absorption of calcium as well.
- No studies have ever found a relationship with bone fractures and higher protein intakes.
- 50% of bone volume is protein.
- IGF-1 is the primary hormone responsible for bone turnover and is increased primarily by protein.
- Bone and muscle loss are directly correlated with aging. What is the primary variable that decreases as we age?

Myth #9:The USDA's Food Guide Pyramid Was Created To Promote Good Health

- Luise Light RD., was asked by the USDA to create a new healthy eating plan to replace the Four Basic Food Groups in the late 1970's.
- Her original pyramid had fruits and vegetables as the base(5-9 servings), with grains and sugars at the top (2-3 servings).
- She has stated that her original pyramid was changed to curb the cost of the food stamp program. *(Also the USDA has to try and please too many people)*
- The Food Guide Pyramid was released in 1992.
- As Luise predicted obesity and diabetes rates have skyrocketed since its inception.

Myth# 10 :Acid reflux is caused by too much acid

- Acid reflux is primarily caused by a faulty LES (lower esophageal sphincter)
- Intra-abdominal pressure can create pressure on stomach forcing LES to not close properly
- Low stomach acid can cause food to sit in stomach too long combined with an over growth of bacteria can lead to fermentation
- Overgrowth of bacteria too far up the GI tract



Beware of Nutrition Studies

- Test Tube Research (in vitro- within the glass)
- Animal Studies
- Case Reports: Involves people or situations
- Observational Studies: Usually involves a group being observed without any change administered to identify trends.
- Controlled Trials: Involves a control group and 2 or more experimental groups. Some sort of change happens to the experimental group while nothing happens to the control group
- Systematic Reviews and Meta-Analysis: A study of studies

Annals of Internal Medicine: October 1, 2019 *Red and Processed Meat Consumption and Risk for All-Cause Mortality and Cardiometabolic Outcomes: A Systematic Review and Meta-analysis of Cohort Studies*

- **Conclusion:** The magnitude of association between red and processed meat consumption and all-cause mortality and adverse cardiometabolic outcomes is very small, and the evidence is of low certainty.

Annals of Internal Medicine: October 1, 2019

- **Data Synthesis:** Of 61 articles reporting on 55 cohorts with more than 4 million participants, none addressed quality of life or satisfaction with diet. Low-certainty evidence was found that a reduction in unprocessed red meat intake of 3 servings per week is associated with a very small reduction in risk for cardiovascular mortality, stroke, myocardial infarction (MI), and type 2 diabetes. Likewise, low-certainty evidence was found that a reduction in processed meat intake of 3 servings per week is associated with a very small decrease in risk for all-cause mortality, cardiovascular mortality, stroke, MI, and type 2 diabetes.
- **Limitation:** Inadequate adjustment for known confounders, residual confounding due to observational design, and recall bias associated with dietary measurement.

Archives of Internal Medicine: April 9, 2012 *Red Meat Consumption and Mortality: Results from 2 Prospective Cohort Studies*

* Nurses Health Study (28 years) and Health Professional's Study (22 years) following 120,000 men and women

- Found single serving of unprocessed red meat daily was associated with 13% increase risk of death from all causes and a single serving of processed meat (hot dog) was associated with 20% increased risk.
- Observational studies: starting point to come up with a theory. Hard to come to a true cause and effect.

Archives of Internal Medicine: April 9, 2012

- Both studies based on food frequency questionnaires(FFQ) filled out every 4 years and lifestyle and medical questionnaires every 2 years
- FFQ's tend to consistently show people over report consumption of healthy foods and underreport unhealthy foods
- Hamburger and pork sandwiches were listed under unprocessed meat
- People who ate the most red meat smoked the most, had higher alcohol intake, exercised the least, and were less likely to take a multi-vitamin
- People in lowest meat consumption group ate about 800 less calories (reported) than those in highest meat group
- People who ate the least amount of red meat had highest cholesterol

HPFU Study

		Least	2nd least	middle	2nd most	Most	Total
Unprocessed Meat	Deaths	1,855	1,722	1,535	1,819	1,995	8,926
	Person years	150,676	149,097	154,352	150,925	153,574	758,524
Processed Meat	Deaths	1,917	1,395	1,661	1,717	2,236	8,926
	Person years	171,619	131,069	152,481	152,128	151,227	758,524

Beware of Nutrition Studies

- Many studies are done on cells in test tubes not whole organisms
- Animal studies
- Observational/Epidemiological studies can have too many variables unaccounted for
- Based on inaccurate food questionnaires
- Financial disclosure
- Human bias
- Pesky statistics: relative and absolute risk

“Eating an egg everyday doubles your risk of developing heart disease!”

or

2 out of 1,000 died

4 out of 1,000 died