

Understanding & Managing Cholesterol

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What is Cholesterol?

- Cholesterol is a waxy substance. It's not inherently "bad." In fact, your body needs it to build cells. But too much cholesterol can pose a problem.
- The liver uses cholesterol to make bile to digest foods and Vitamin D and the adrenal glands and gonads use cholesterol to make hormones.
- The brain manufactures its own cholesterol.



The Basic Lipid Panel

LDL-The bad cholesterol (<100, <70)

HDL-The good cholesterol (>40 M >50 F)

TRIGLYCERIDES (<150)

Total Chol = LDL-C + HDL-C + TG/5

(If the TG's are < 400)

Lipoproteins: The Bad (LDL) and the Good (HDL)

- Cholesterol is carried in lipoproteins the way passengers are carried in a bus.
- The lipoproteins have different functions (or routes) so they do different things.

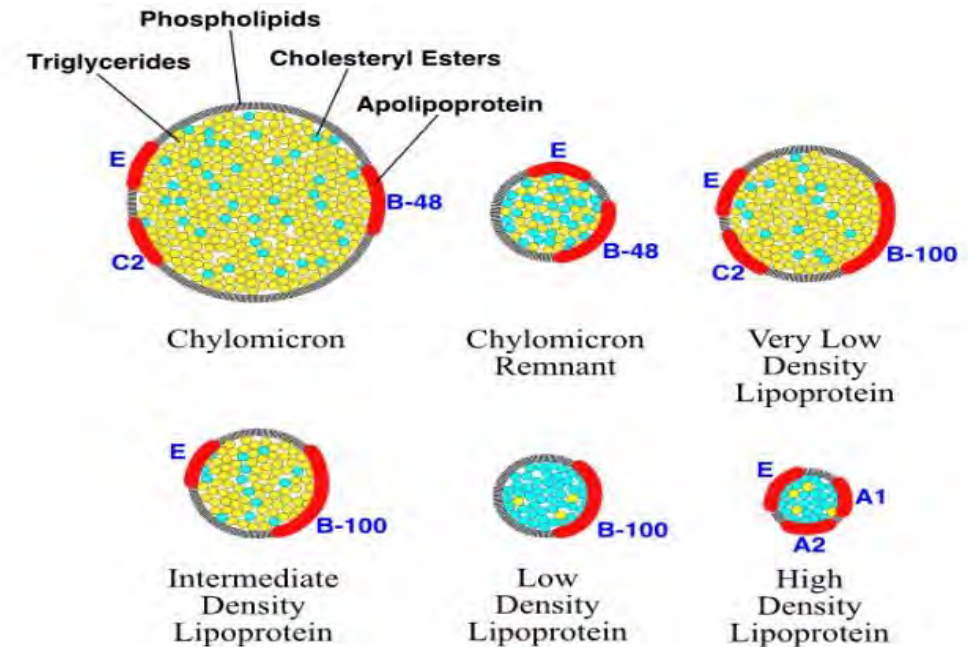
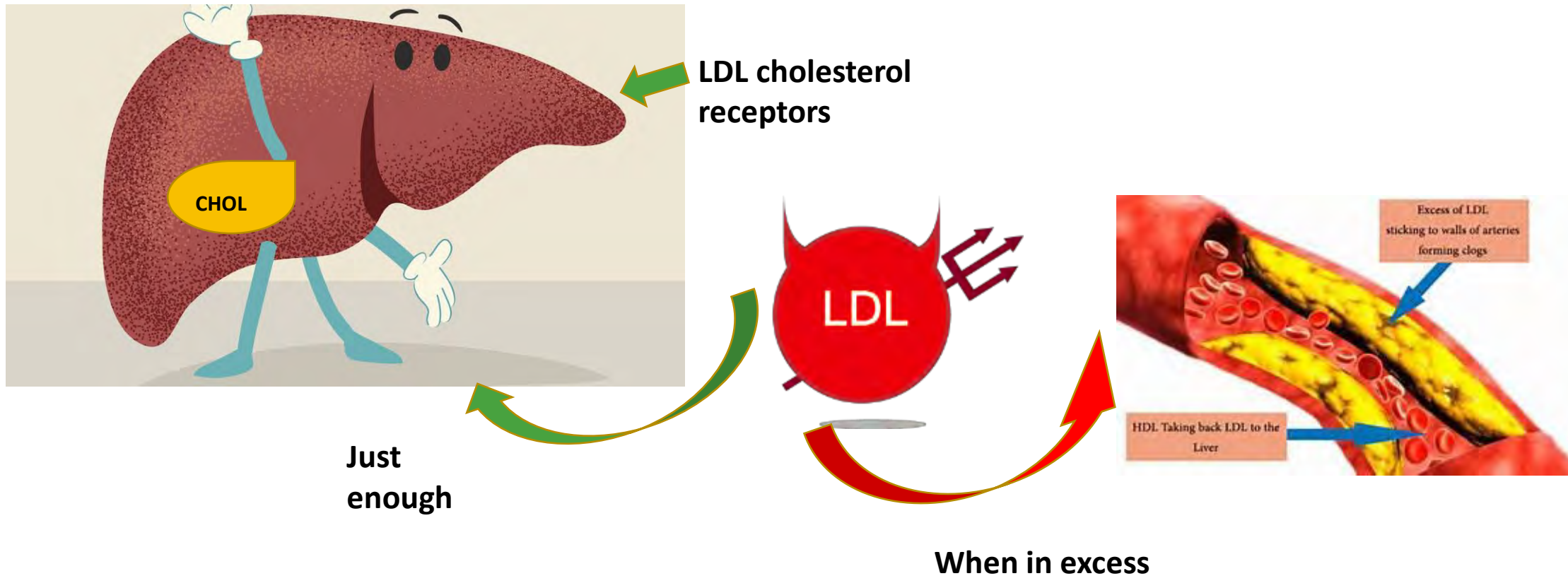


Figure 2.1: Approximate relative sizes and compositions of the six major classes of lipoproteins. The specific apolipoprotein components of each lipoprotein are also indicated.

LDL (Low-Density Lipoproteins) the “Bad Cholesterol”



LDL-C Deposits in the Arteries and HDL-C Attempts to Remove it!

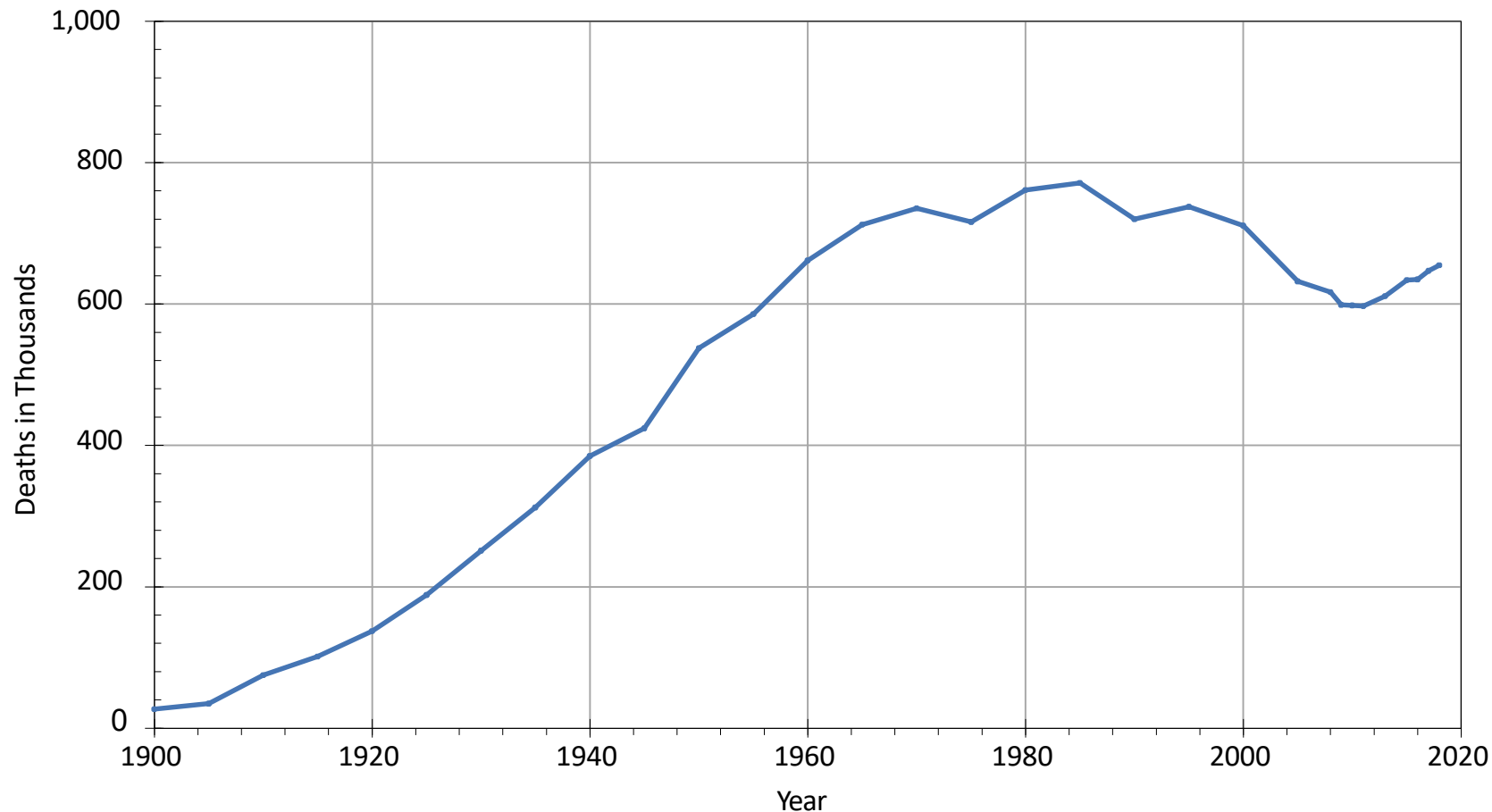
- LDL-C deposits in arteries when in excess and creates plaque formation.
- HDL-C can remove cholesterol and bring it back to the liver and other organs like the adrenal glands and gonads.
- We hope that our HDLs are functioning well and working hard. We can measure the amount of HDL in our blood but not how well it's doing its job!



Heart Disease in the United States

- Heart disease is the **leading cause of death** for men, women, and people of most racial and ethnic groups in the United States.¹
- **One person dies every 36 seconds** in the United States from cardiovascular disease.¹
- About **655,000 Americans** die from heart disease each year — that's **1 in every 4 deaths**.²
- Heart disease costs the United States about **\$219 billion** each year from 2014 to 2015.³ This includes the cost of health care services, medicines and lost productivity due to death.

Deaths Attributable to Cardiovascular Disease, U.S., 1900-2018



Heart Attack

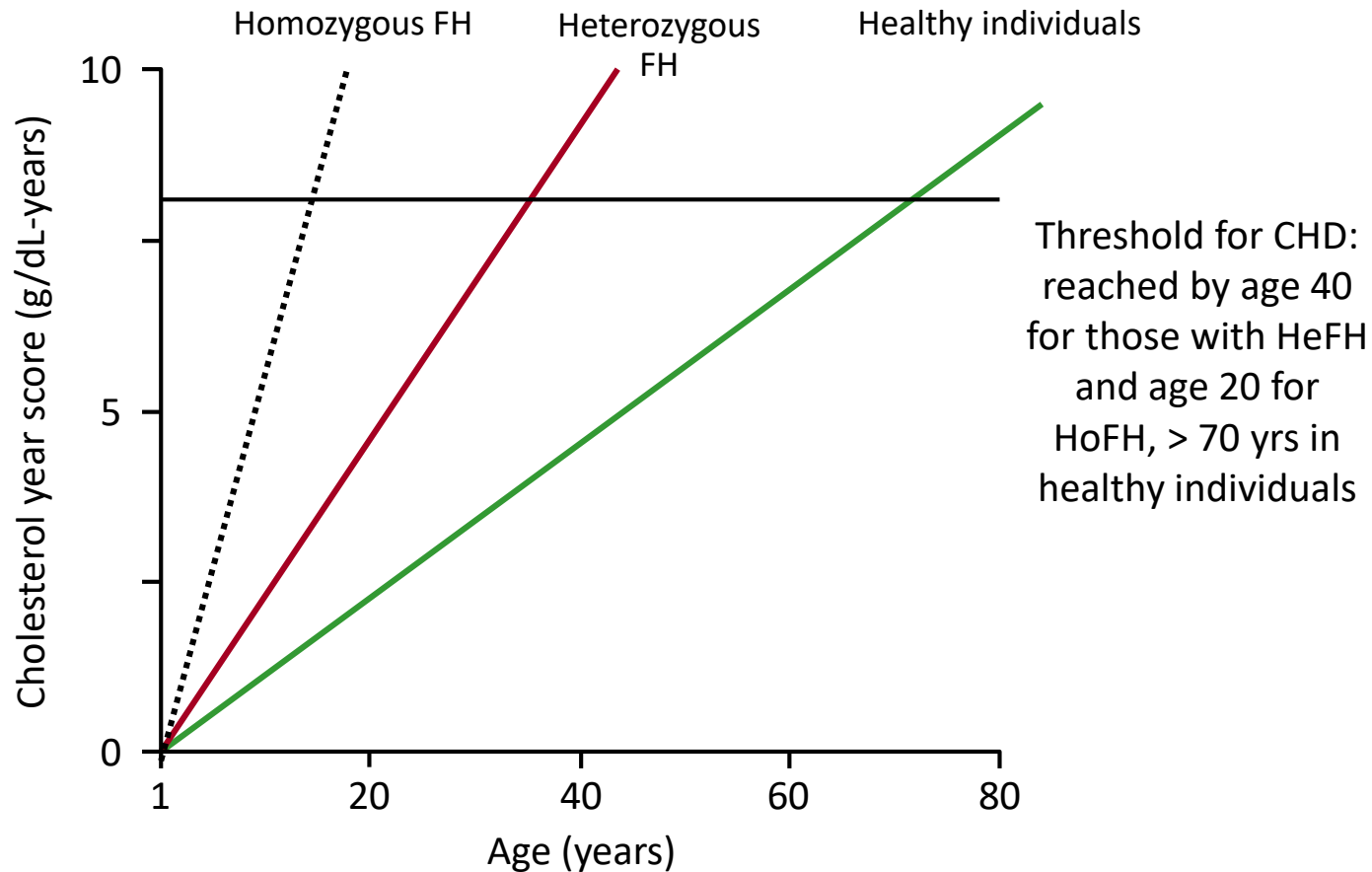
- In the United States, someone has a heart attack every 40 seconds.³
- Every year, about **805,000 Americans** have a heart attack.³ Of these,
 - 605,000 are a first heart attack³
 - 200,000 happen to people who have already had a heart attack³
 - About **1 in 5 heart attacks is silent** — the damage is done, but the person is not aware of it.³

How Does Heart Disease Affect Women?

- Despite increases in awareness over the past decades, **only about half (56%)** of women recognize that heart disease is their **number 1 killer**.¹
- **Heart disease is the leading cause of death for women in the United States**, killing 299,578 women in 2017 — or about **1 in every 5** female deaths.²
- Heart disease is the **leading cause of death for African American and white women** in the United States. Among American Indian and Alaska Native women, heart disease and cancer cause roughly the same number of deaths each year. For Hispanic and Asian or Pacific Islander women, heart disease is second only to cancer as a cause of death.³
- **About 1 in 16 women age 20 and older (6.2%) have coronary heart disease**, the most common type of heart disease:⁴
 - **About 1 in 16** white women (6.1%), black women (6.5%), and Hispanic women (6%)
 - **About 1 in 30** Asian women (3.2%)

FH Exposes People to Very High Cholesterol from Birth, Thus Reaching a Threshold for CHD Earlier in Life

Cumulative Exposure (Cholesterol Years) by Age: FH vs. Unaffected (Healthy) Individuals

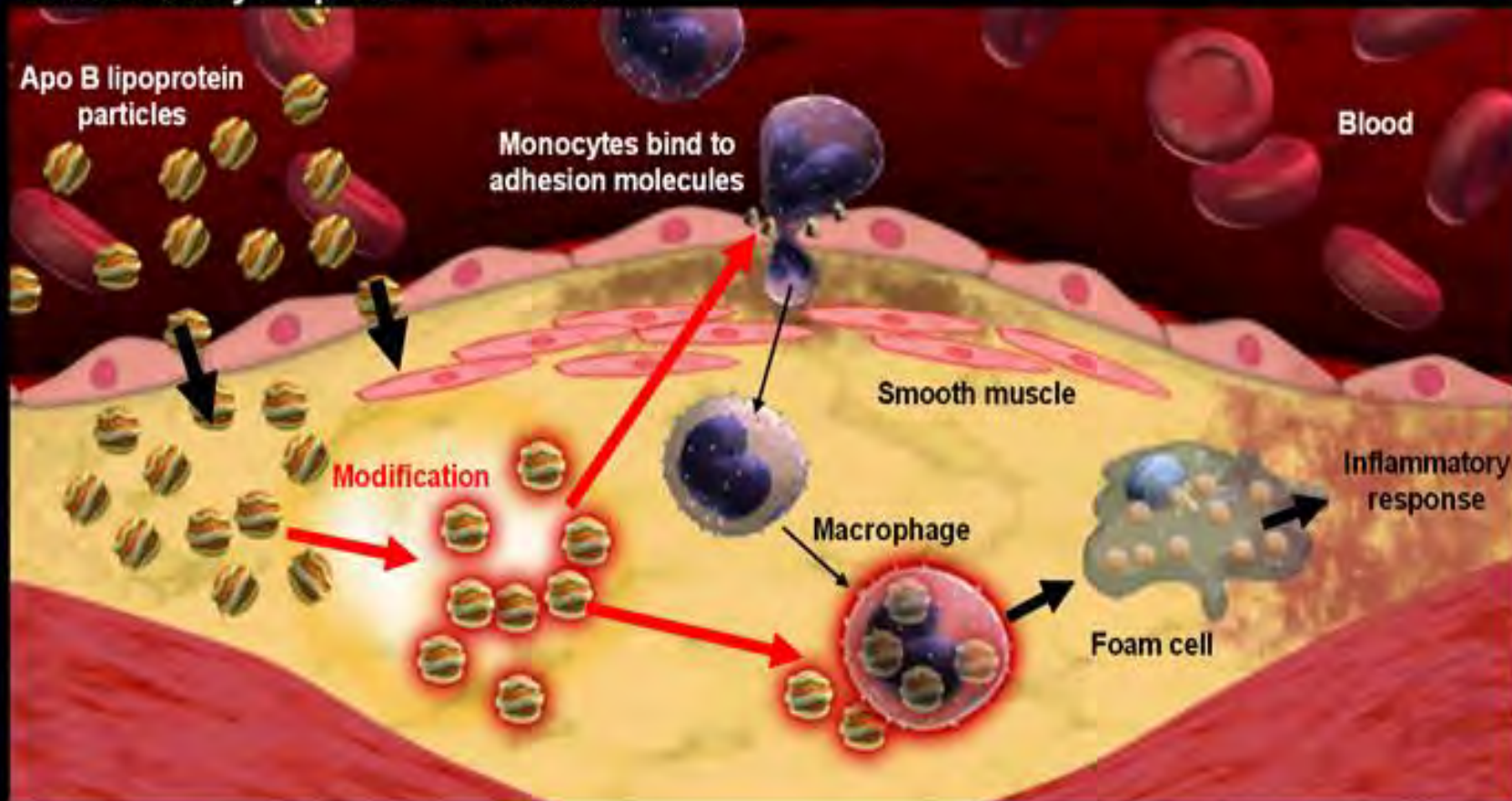


Atherosclerosis is an Inflammatory Disease Initiated by LDL-C (Bad Cholesterol)

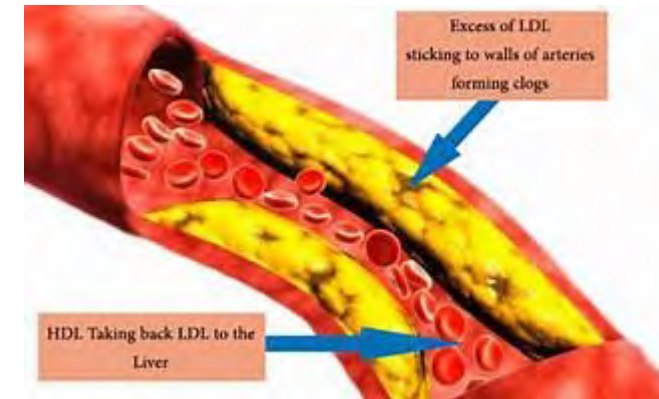
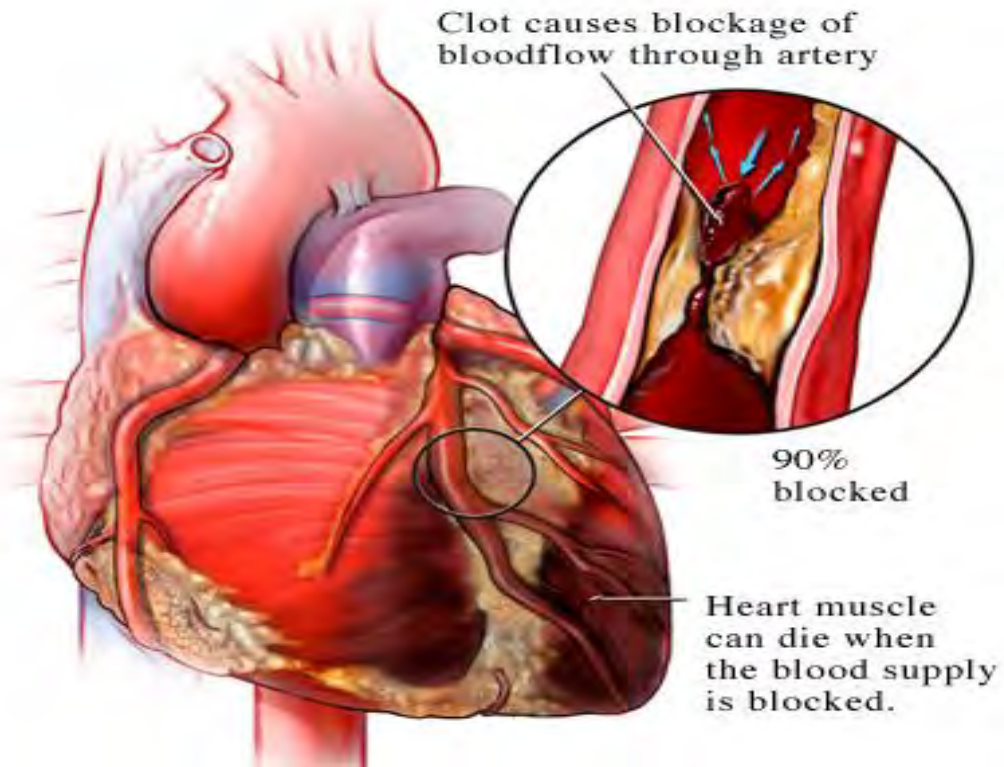
Cardiovascular Risk Increases With Increased Plasma Apo B Lipoproteins



Rationale for therapeutic lowering of Apo B lipoproteins: decrease the probability of inflammatory response to retention



The Consequences of a Ruptured Unstable Plaque due to LDL-C in Excess



Bad Choices!



Good Choices



Anyone Hungry?



The Scene of the Crime!



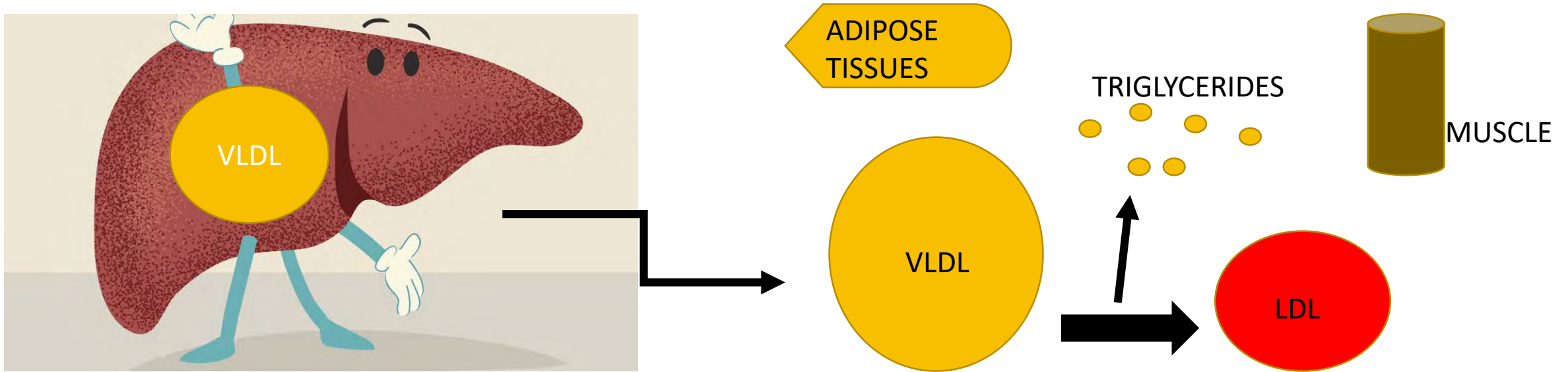
“My husband Just Left to the Gym to Workout.”



Modern Life Has Both Conveniences and Costs



What are Triglycerides and What do They do?

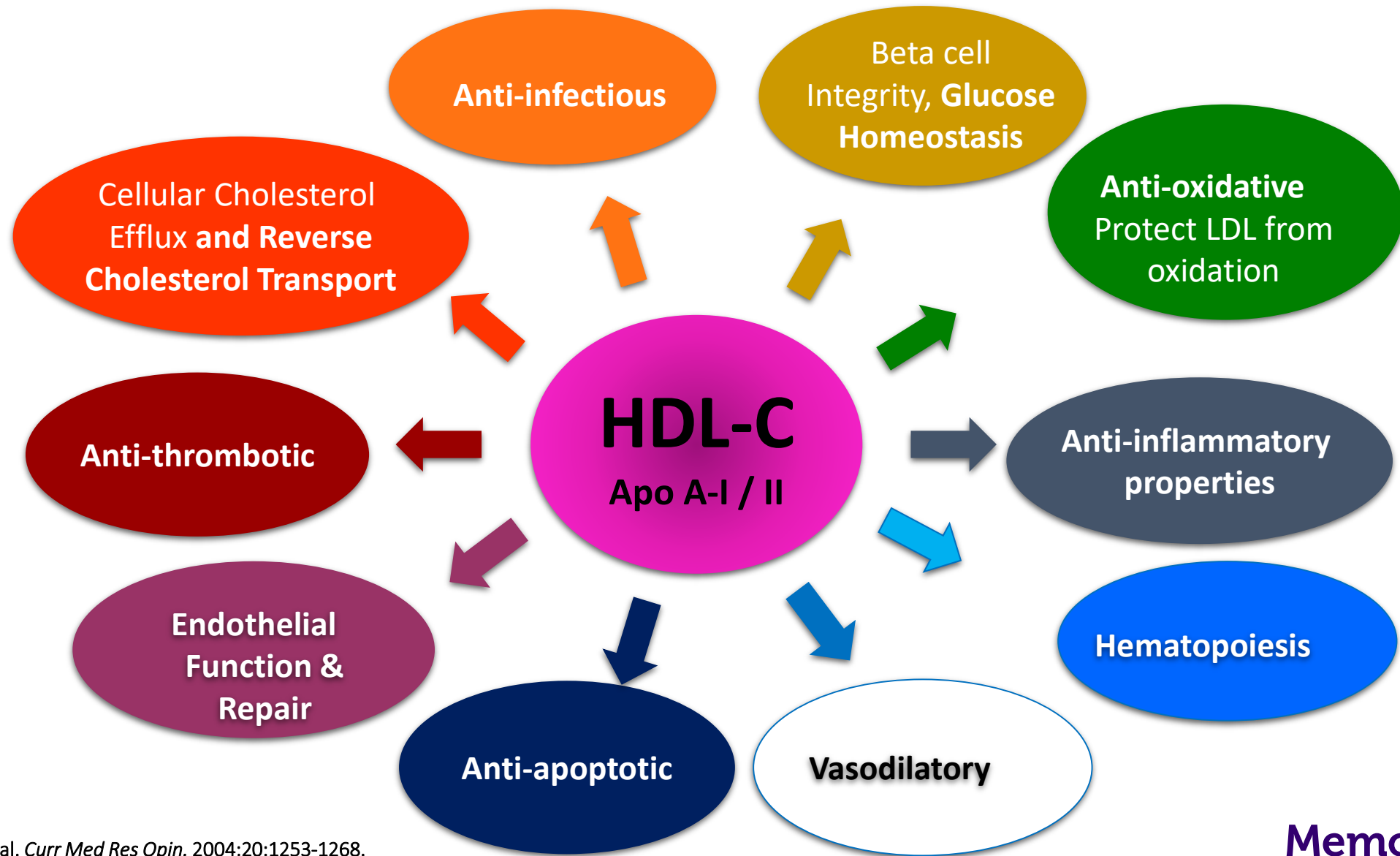


Triglycerides are energy packets

Causes of Elevated Triglycerides

- Obesity and overweight
- Physical inactivity
- Cigarette smoking
- Excess alcohol intake
- High-carbohydrate diets (>60% of energy intake)
- Comorbidities (type 2 diabetes, chronic renal failure, nephrotic syndrome)
- Medications (beta-blockers, estrogen, protease inhibitors, corticosteroids, retinoids, etc.)
- Genetic dyslipidemias

HDL's Complexity: Anti-Atherogenic Actions



Prevention

“The average doctor treats the full-blown sickness.

The better doctor attends to the impending illness.

The superior doctor prevents sickness.”

- Chinese Proverb

Thank you.

*Please submit your
questions in the chat box.*