Remedy
HEALTH

Eradicating Heart Disease Through Nutrition

ORU | April 20, 2023

No Financial Conflicts of Interest

HEART DISEASE — BY THE NUMBERS

20%
Percentage of heart attacks that are silent

18.2M
Americans aged 20 and older with coronary heart disease

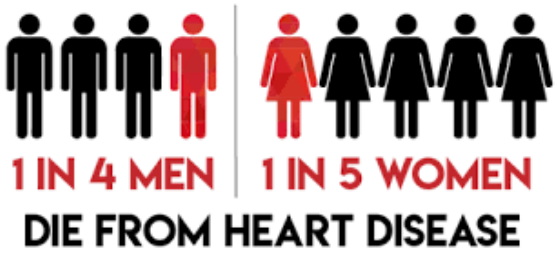
#1
Number one leading cause of death for men and women in the U.S.

647K
Number of Americans who die from heart disease each year

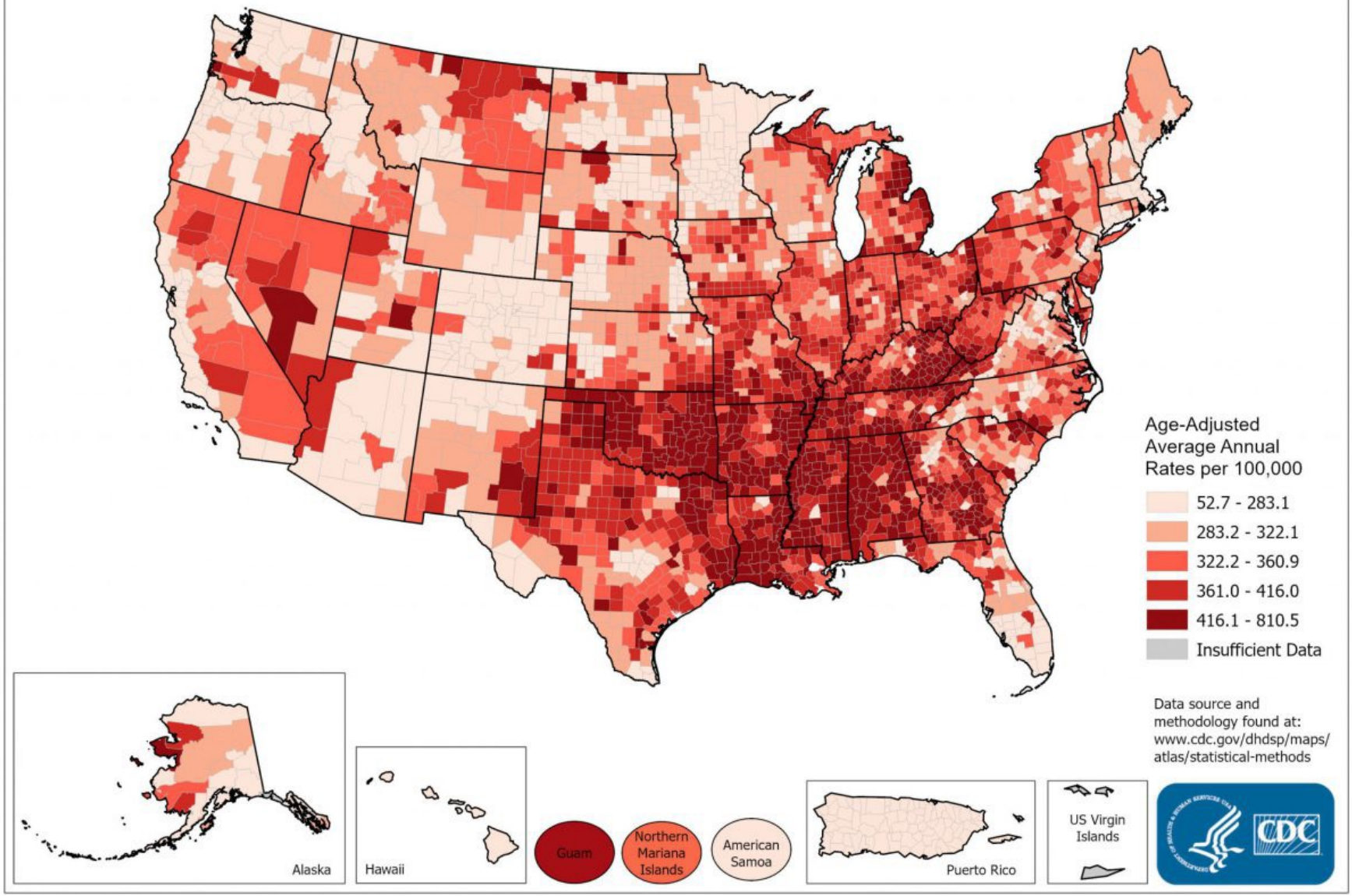
80%
Percentage of preventable cases of heart disease and stroke

SOURCE: CENTERS FOR DISEASE CONTROL AND PREVENTION

healthcentral



Heart Disease Death Rates, 2018 - 2020
Adults, Ages 35+, by County

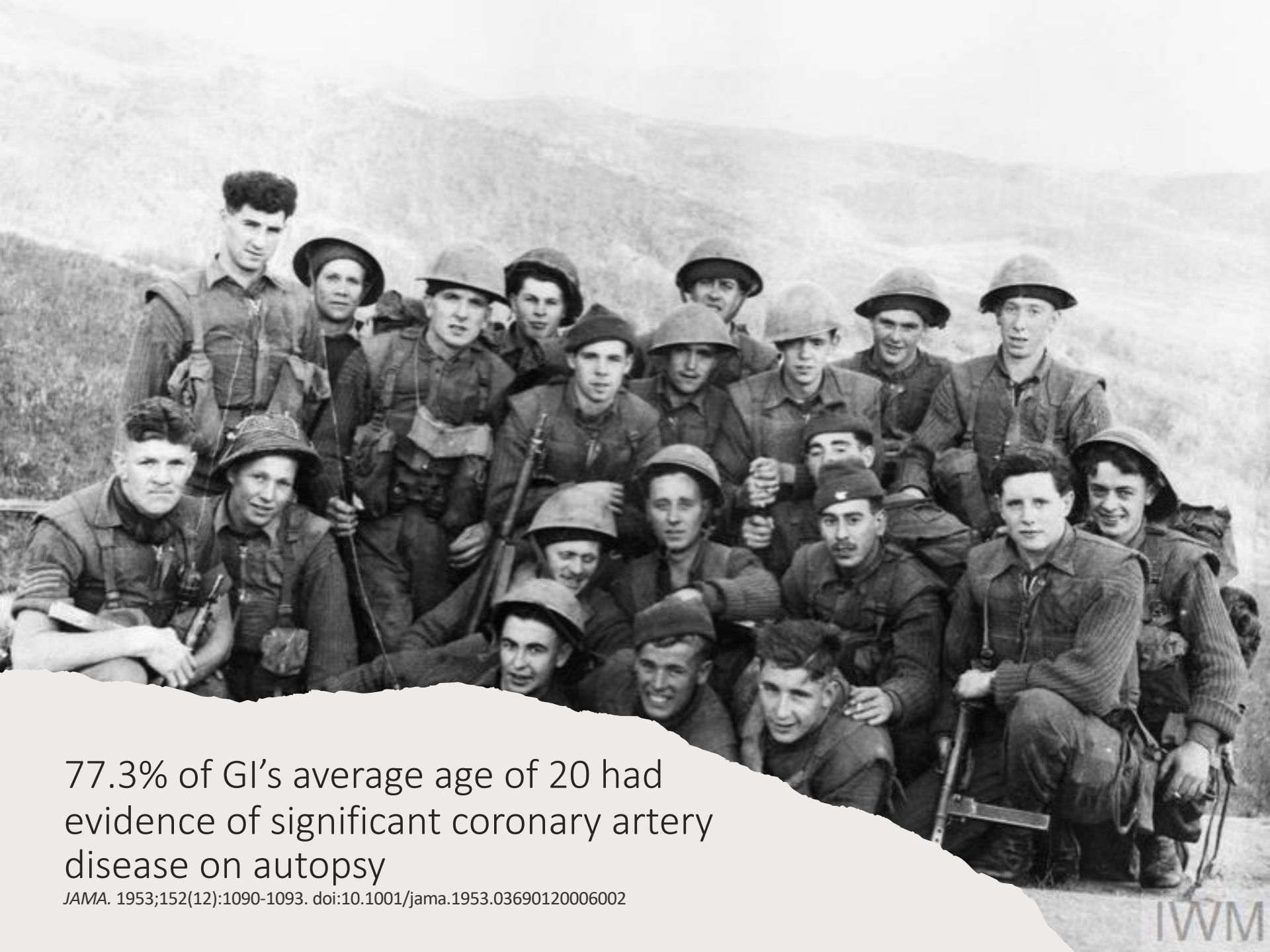


Data source and methodology found at: www.cdc.gov/dhdsp/maps/atlas/statistical-methods

Tommie Griffin | 1940-2012

Absence of Coronary Artery Disease

- Rural China
- Papua New Guinea Highlands
- Central Africa
- Tarahumara Indians



77.3% of GI's average age of 20 had evidence of significant coronary artery disease on autopsy

JAMA. 1953;152(12):1090-1093. doi:10.1001/jama.1953.03690120006002

CAD is Ubiquitous in Youth

February 24, 1999

Prevalence and Extent of Atherosclerosis in Adolescents and Young Adults

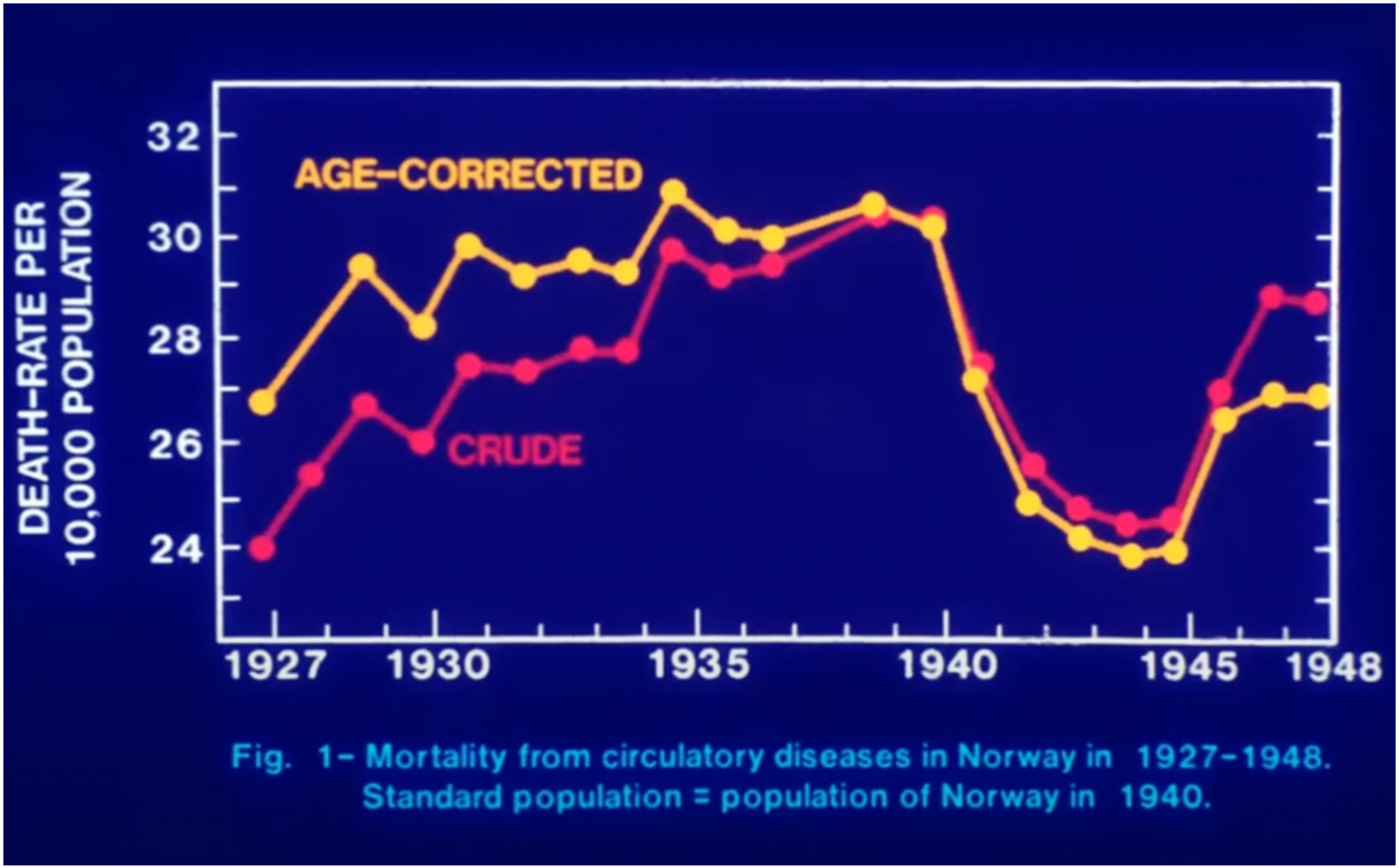
Implications for Prevention From the Pathobiological Determinants of Atherosclerosis in Youth Study

Jack P. Strong, MD; Gray T. Malcom, PhD; C. Alex McMahan, PhD; et al

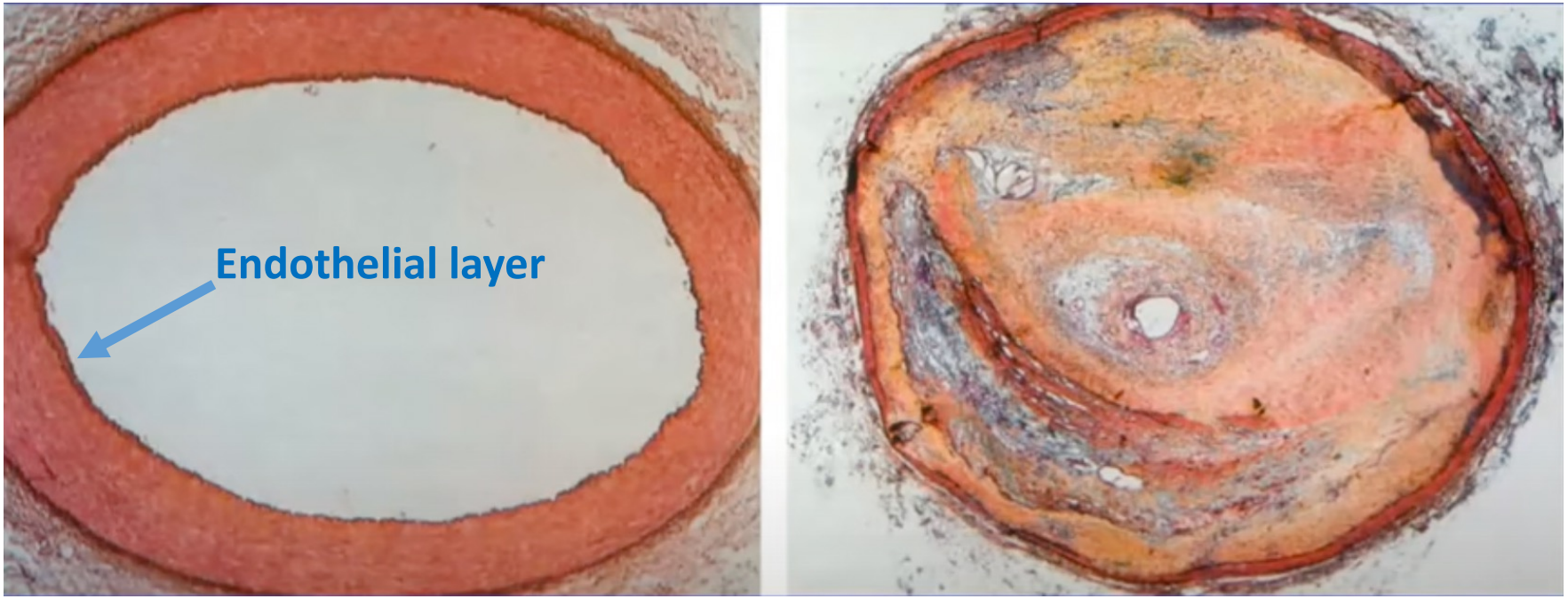
» Author Affiliations

JAMA. 1999;281(8):727-735. doi:10.1001/jama.281.8.727

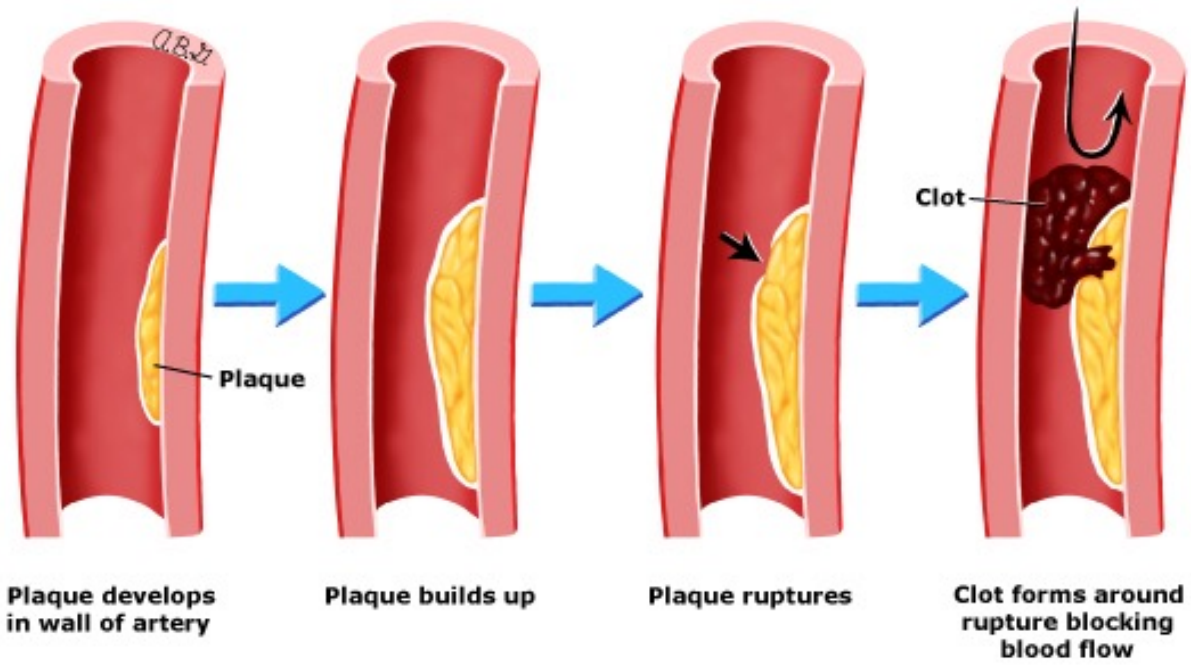
WWII Heart Attack & Stroke Death

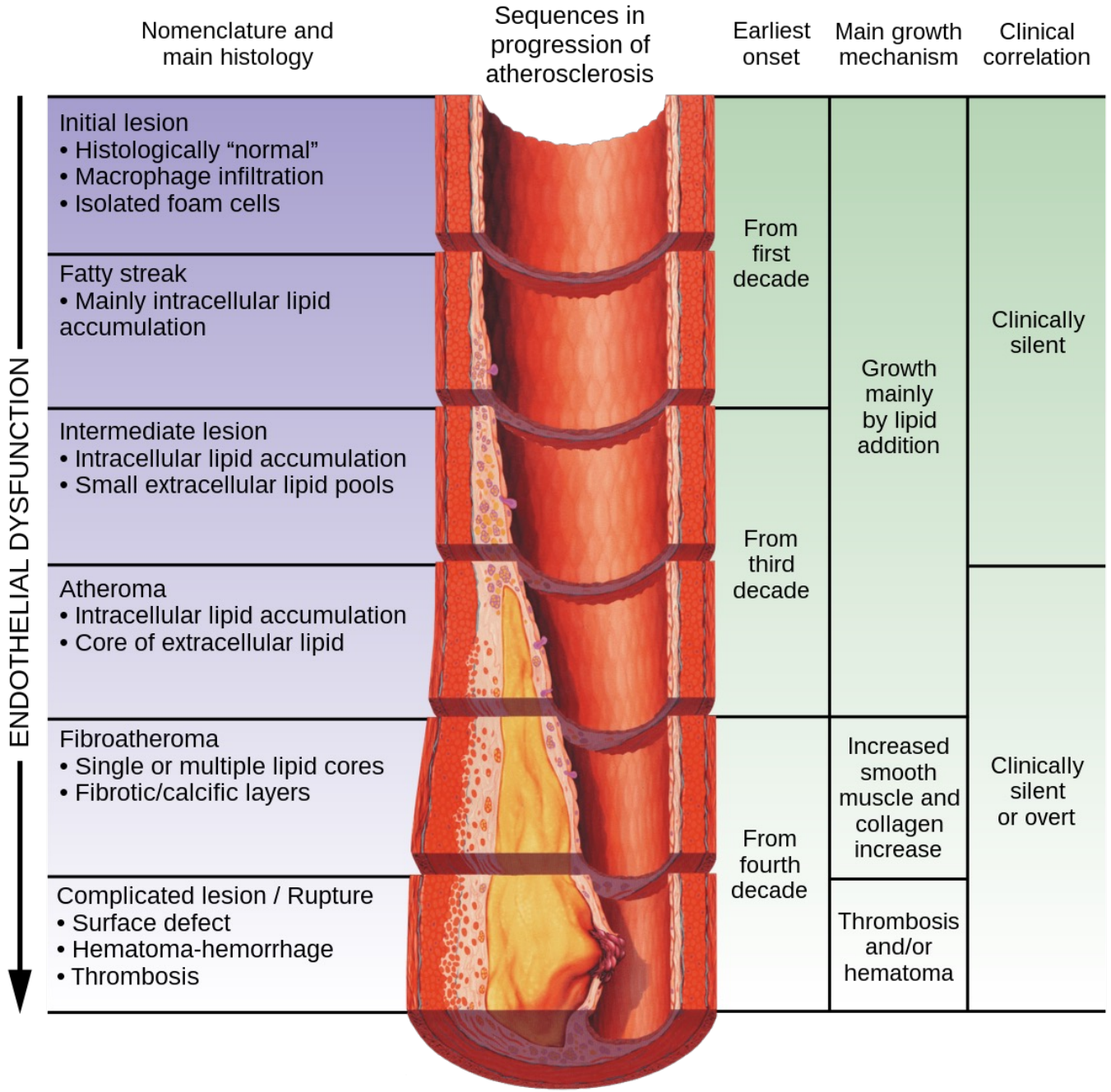


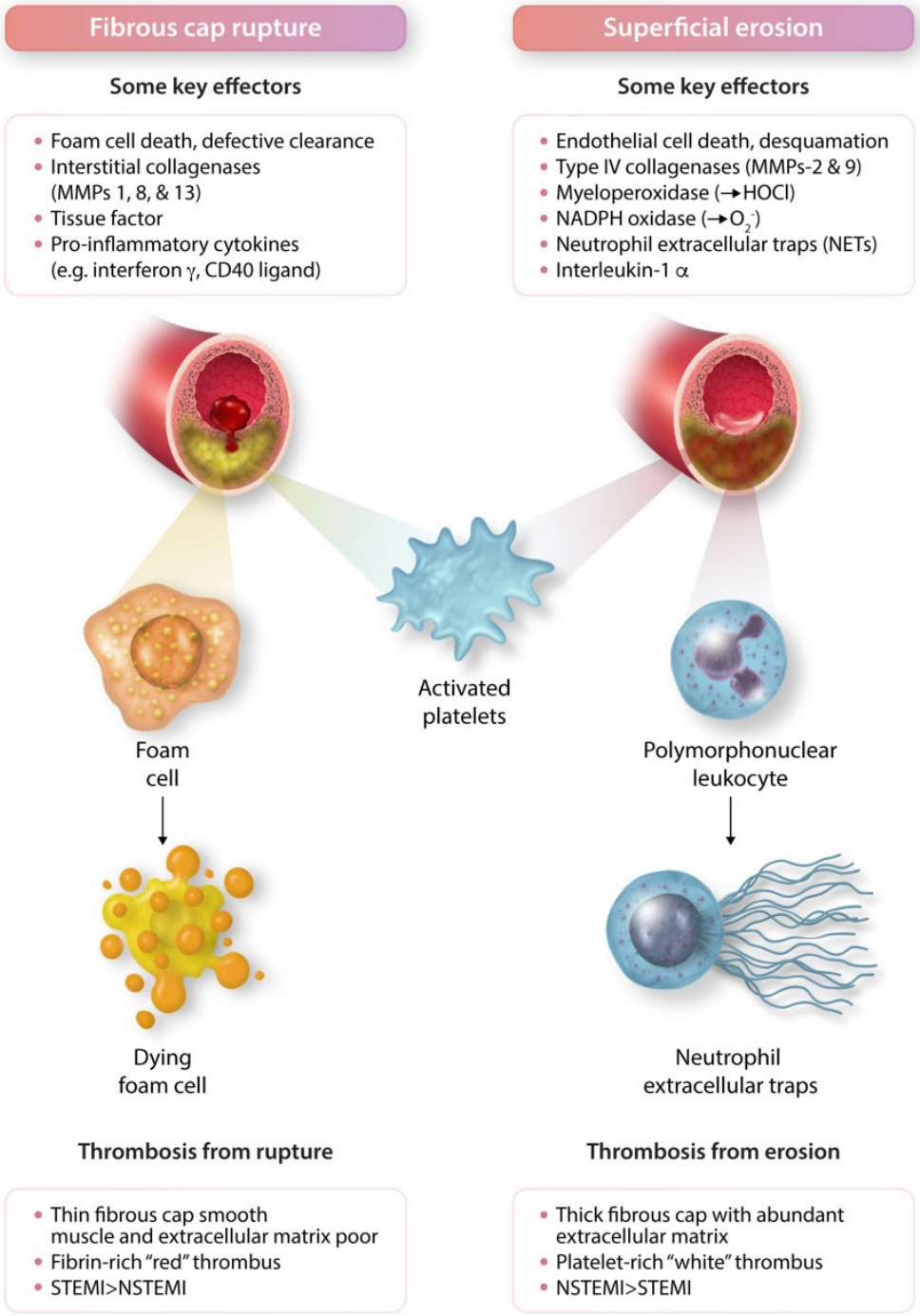
Coronary Artery Cross Section



CAD Progression

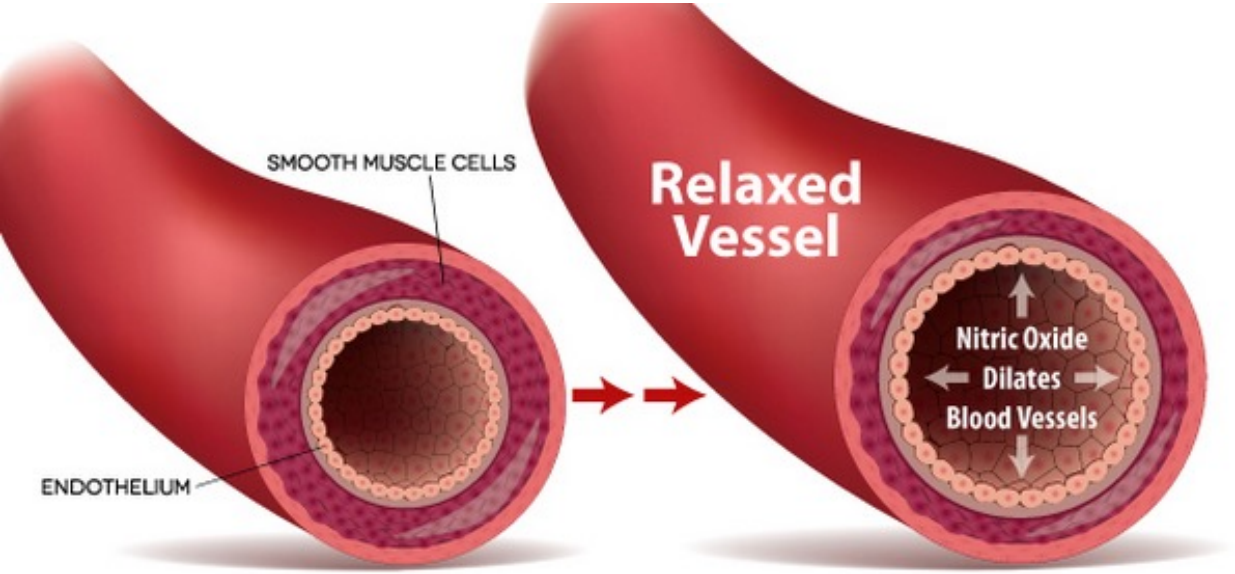



Nomenclature and main histology
Sequences in progression of atherosclerosis
Earliest onset
Main growth mechanism
Clinical correlation
ENDOTHELIAL DYSFUNCTION
Initial lesion
• Histologically “normal”
• Macrophage infiltration
• Isolated foam cells
Fatty streak
• Mainly intracellular lipid accumulation
Intermediate lesion
• Intracellular lipid accumulation
• Small extracellular lipid pools
Atheroma
• Intracellular lipid accumulation
• Core of extracellular lipid
Fibroatheroma
• Single or multiple lipid cores
• Fibrotic/calcific layers
Complicated lesion / Rupture
• Surface defect
• Hematoma-hemorrhage
• Thrombosis
From first decade
From third decade
From fourth decade
Growth mainly by lipid addition
Increased smooth muscle and collagen increase
Thrombosis and/or hematoma
Clinically silent
Clinically silent or overt



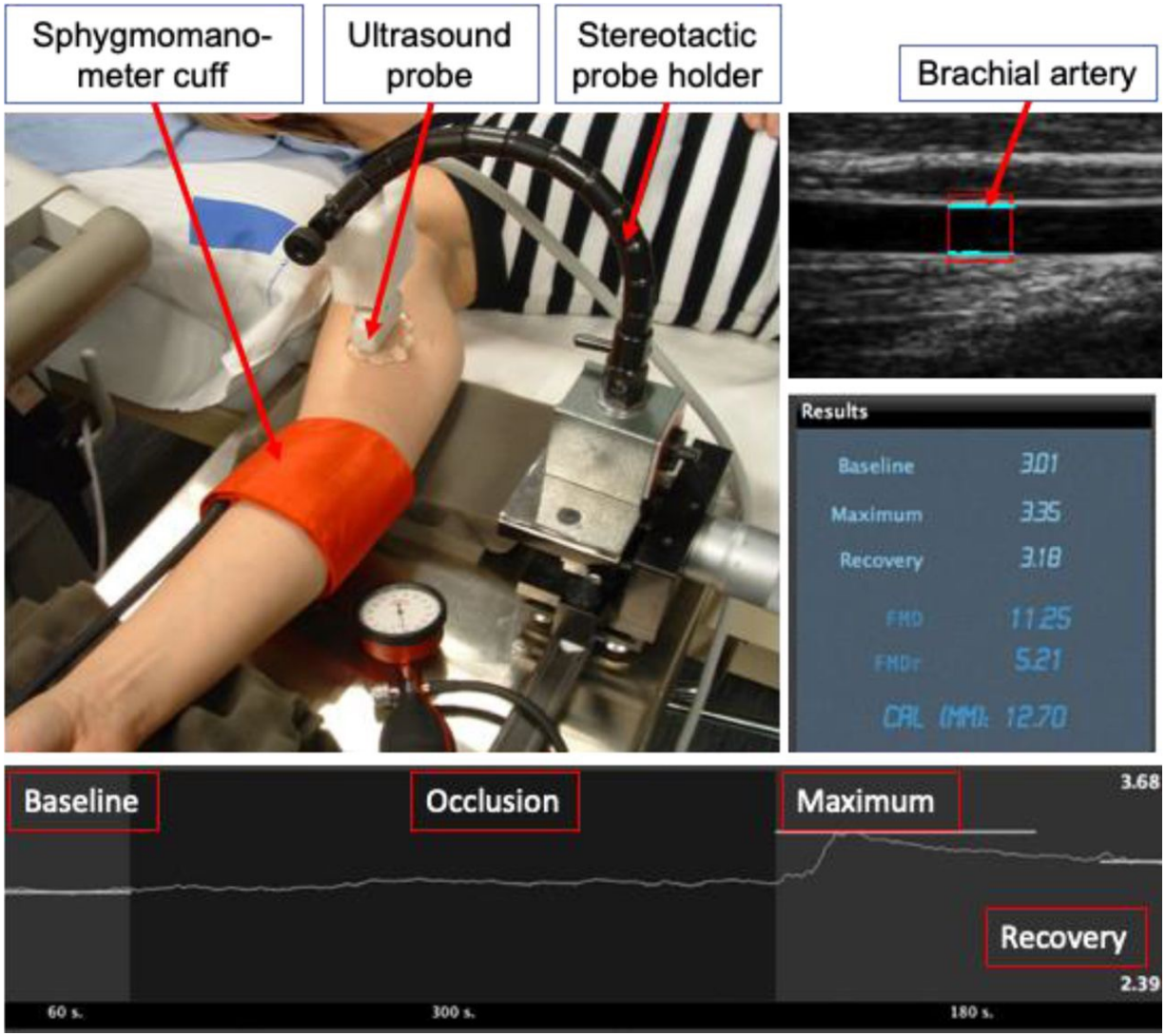
Libby. Cardiovascular Research (2021) 117, 2525–2536 doi:10.1093/cvr/cvab303

The Prominence of Nitric Oxide

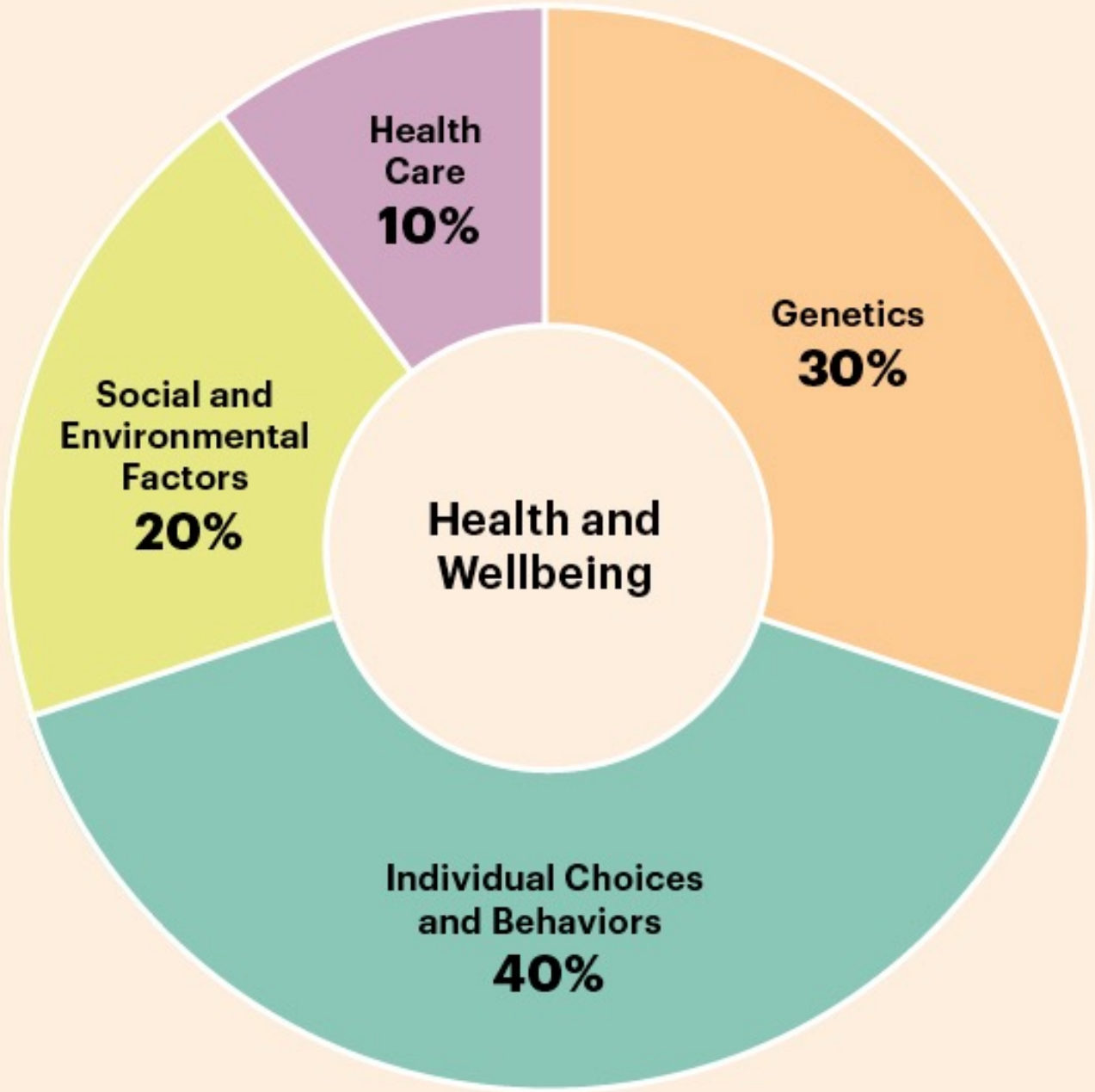


1. Keeps blood flowing smoothly
2. Facilitates vasodilation
3. Prevents endothelial thickening and stiffening
4. Protects against plaque formation

Brachial Artery Tourniquet Test



Empower, equip, and enable patients to achieve their health goals and win back their health.



Lifestyle Medicine

Cleveland Clinic Study

Caldwell Esselstyn, Jr., MD

- 1985-1988
- 23 men and 1 woman
- Ages 44-68
- All with 3-vessel coronary artery disease
- Method:

No oil
No fish
No fowl
No meat
No dairy
No caffeinated coffee

Oil Damages the Endothelium

Nutrition, Metabolism & Cardiovascular Diseases (2007) 17, 50–57

ELSEVIER

Nutrition,
Metabolism &
Cardiovascular Diseases

www.elsevier.com/locate/nmcd

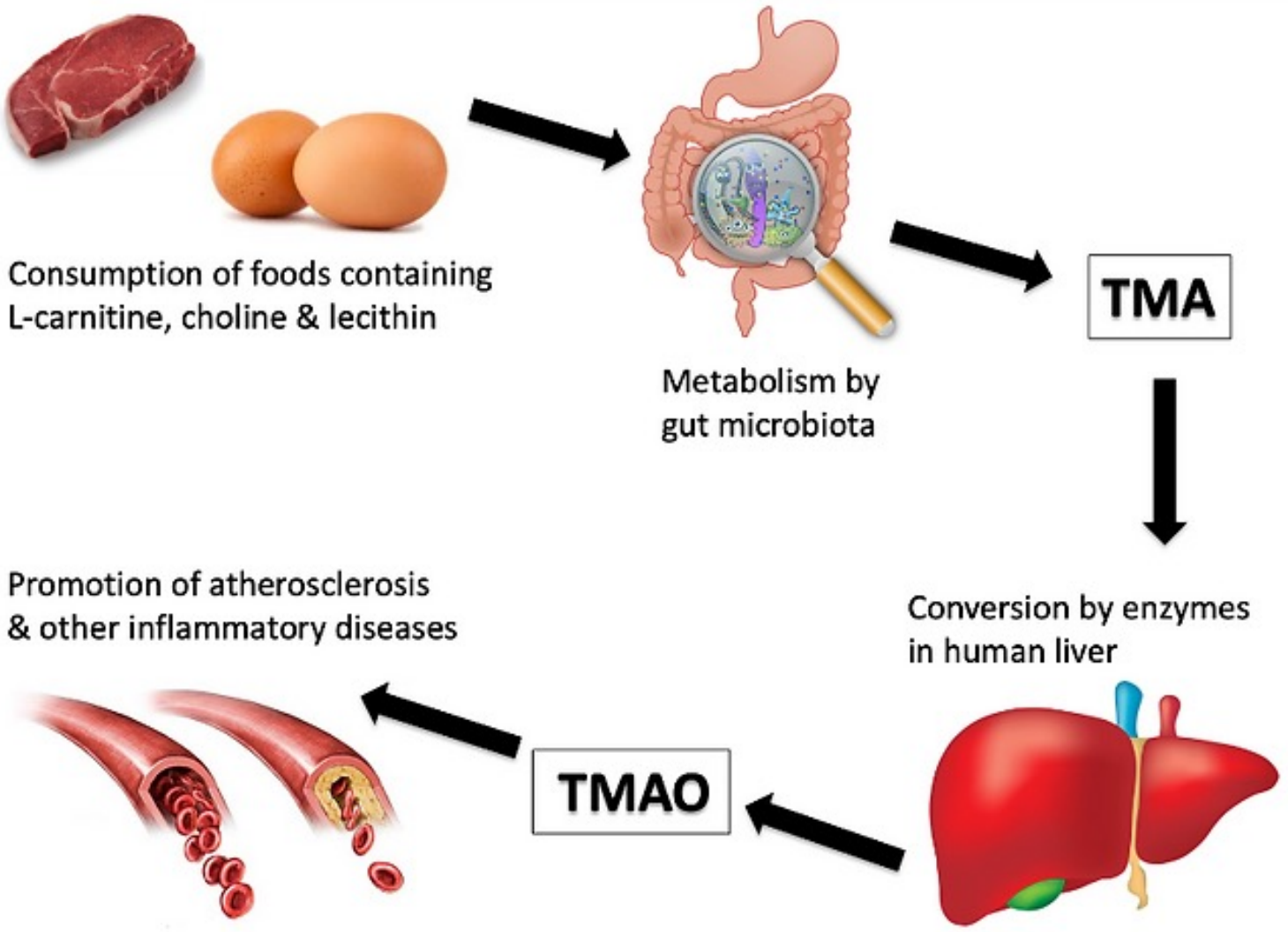
Olive, soybean and palm oils intake have a similar acute detrimental effect over the endothelial function in healthy young subjects

Christian F. Rueda-Clausen [a], Federico A. Silva [a,b],
Manuel A. Lindarte [a], Cristina Villa-Roel [a], Elieth Gomez [b],
Roberto Gutierrez [c], Carlos Cure-Cure [d], Patricio López-Jaramillo [a,*]

Lecithin and Carnitine

- Eggs
- Milk
- Cream
- Dairy
- Liver
- Red Meat
- Fish
- Poultry
- Pork
- Duck
- Lamb
- Venison
- Shell Fish

TMAO Promotes CAD

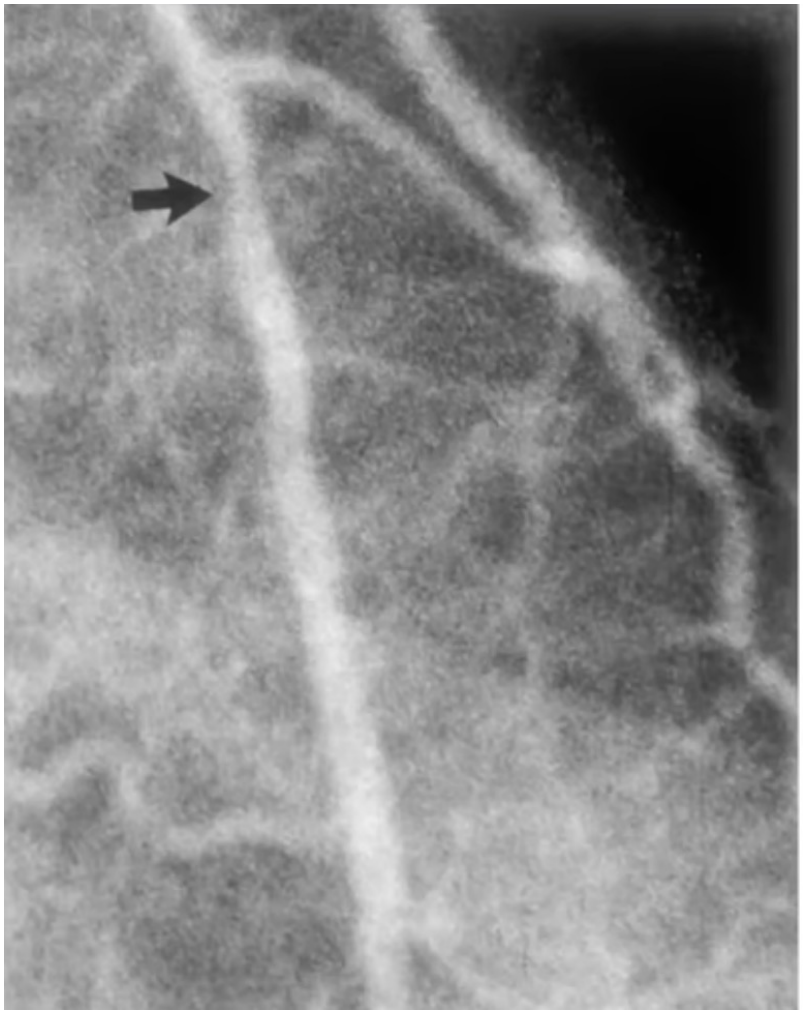


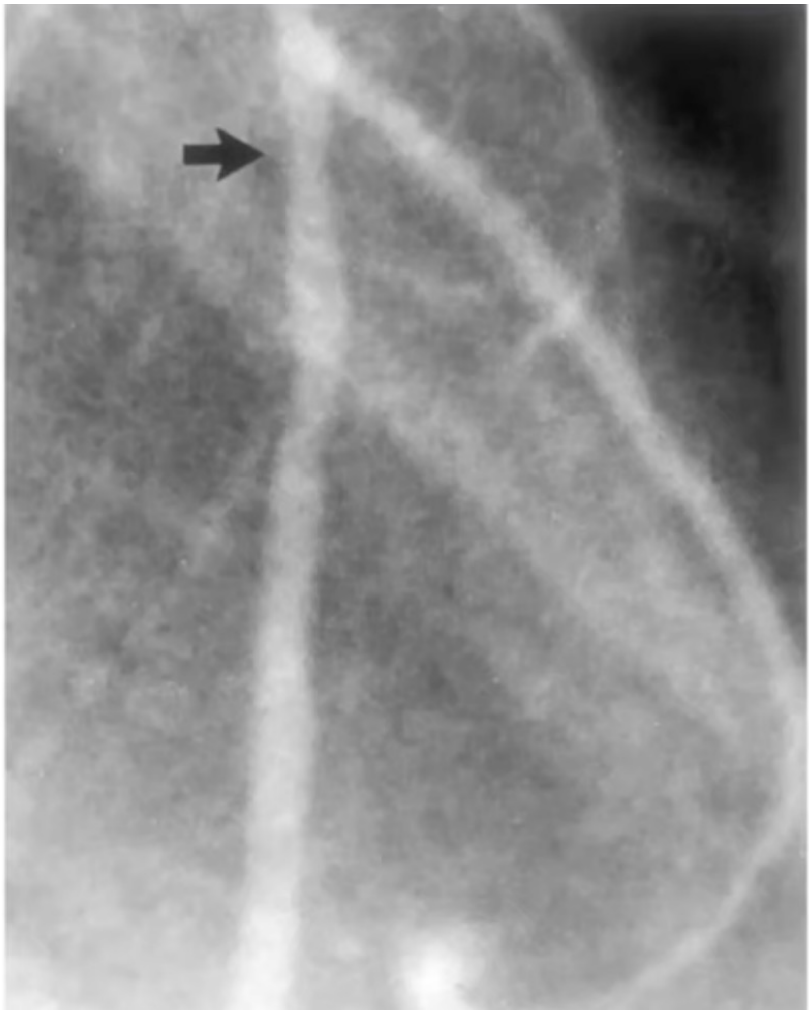
Cleveland Clinic Study

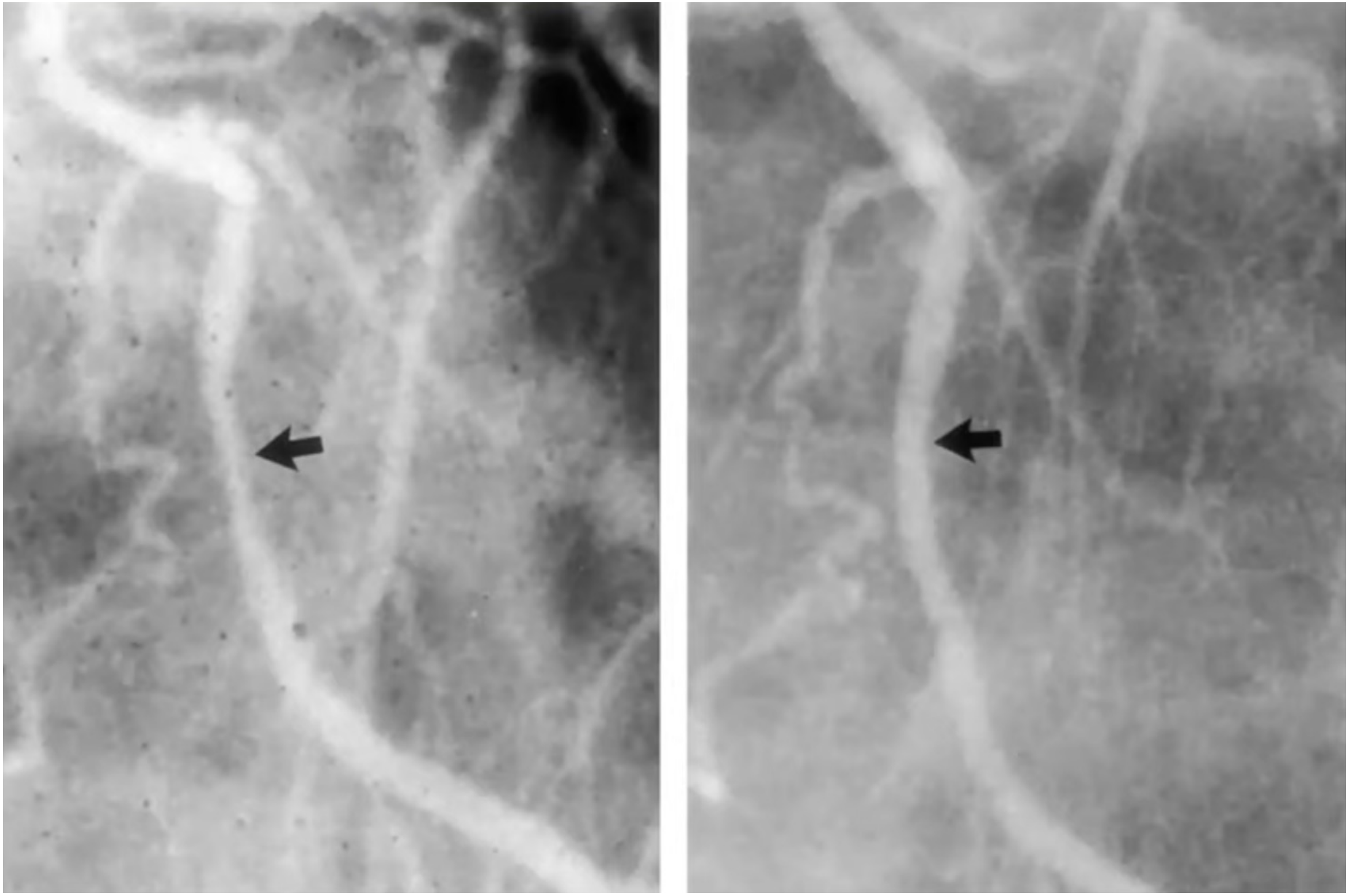
Caldwell Esselstyn, Jr., MD

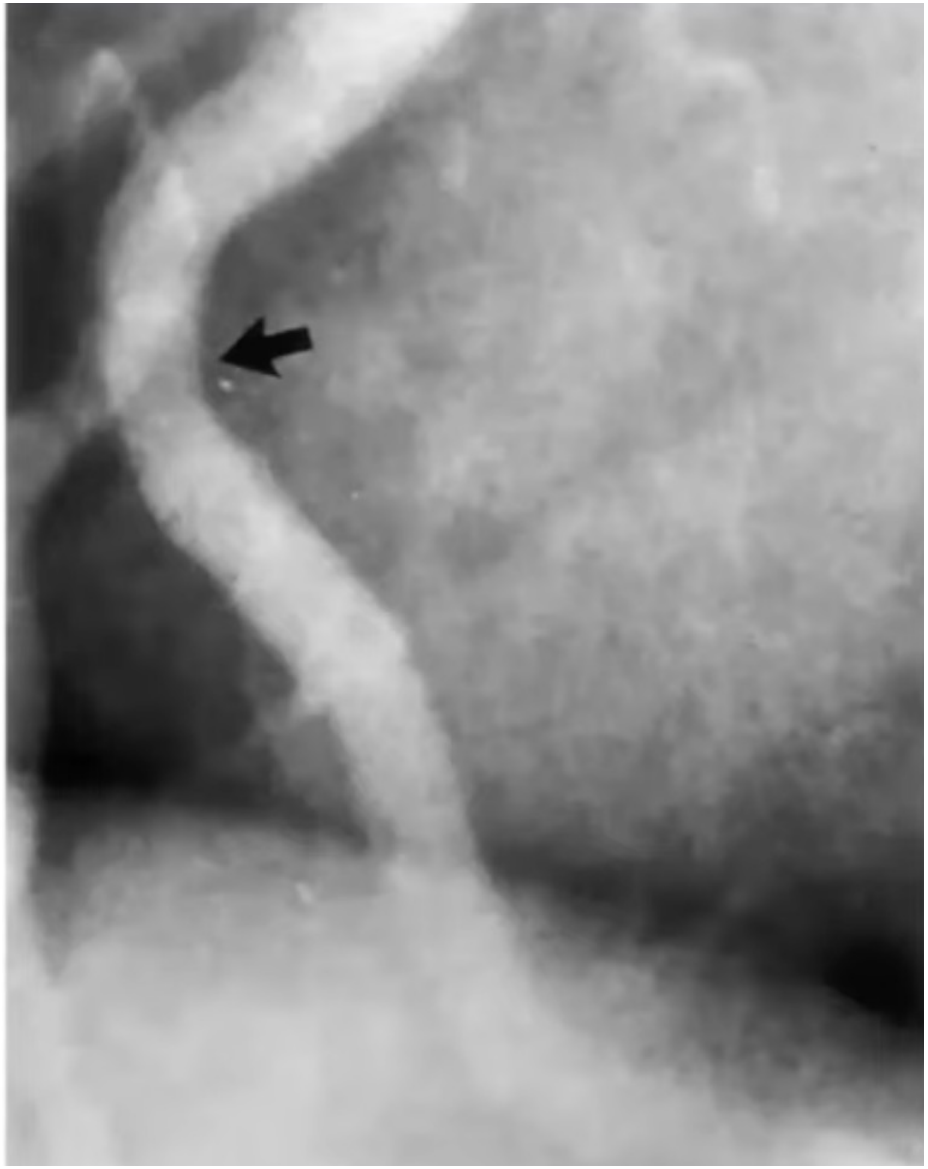
- Foods included:
  - Whole grains
  - Legumes
  - Lentils
  - Vegetables
  - Fruit
- Stimulate nitric oxide production
  - Green leafy vegetables 6 times per day with balsamic vinegar

CAD Reversal!

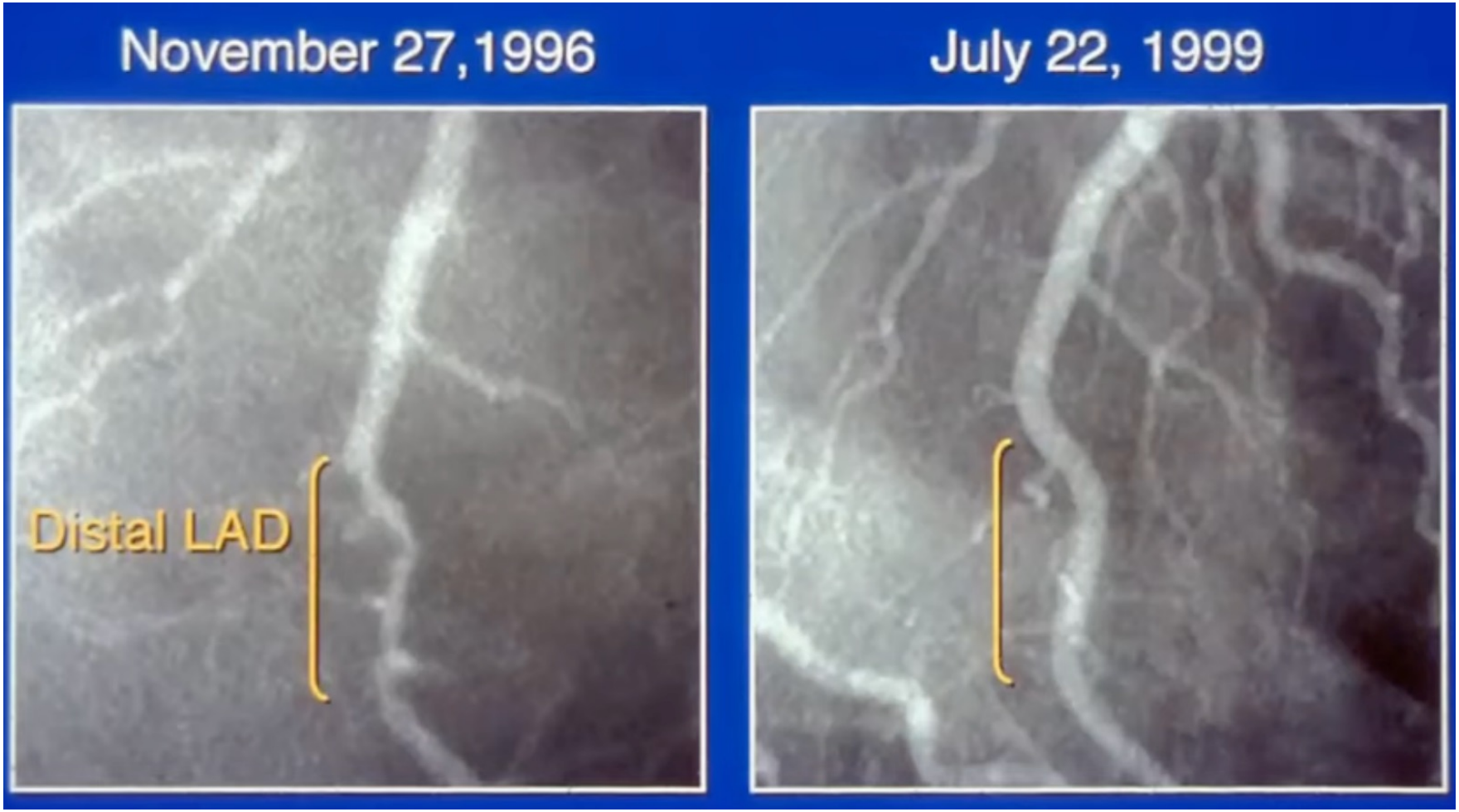




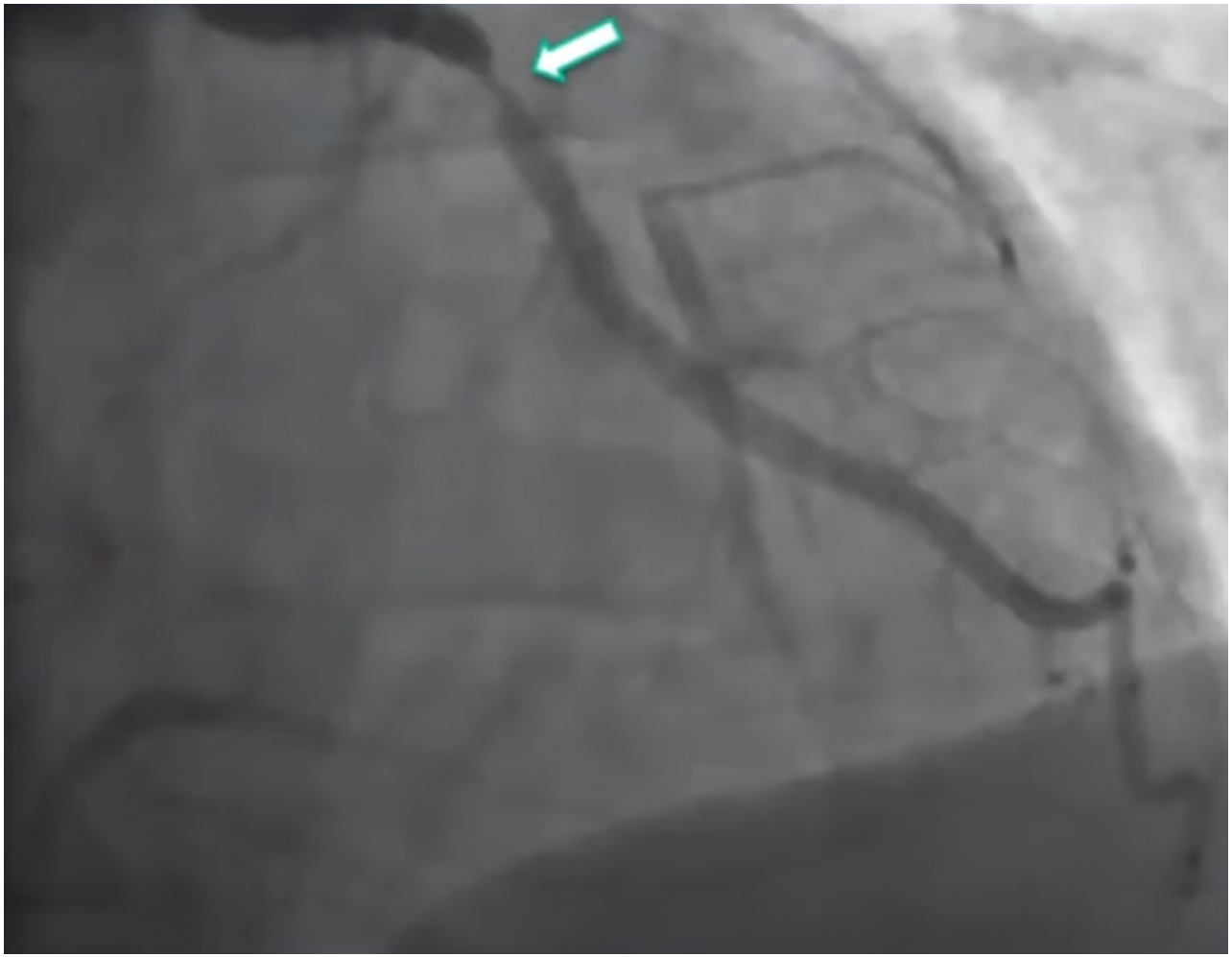




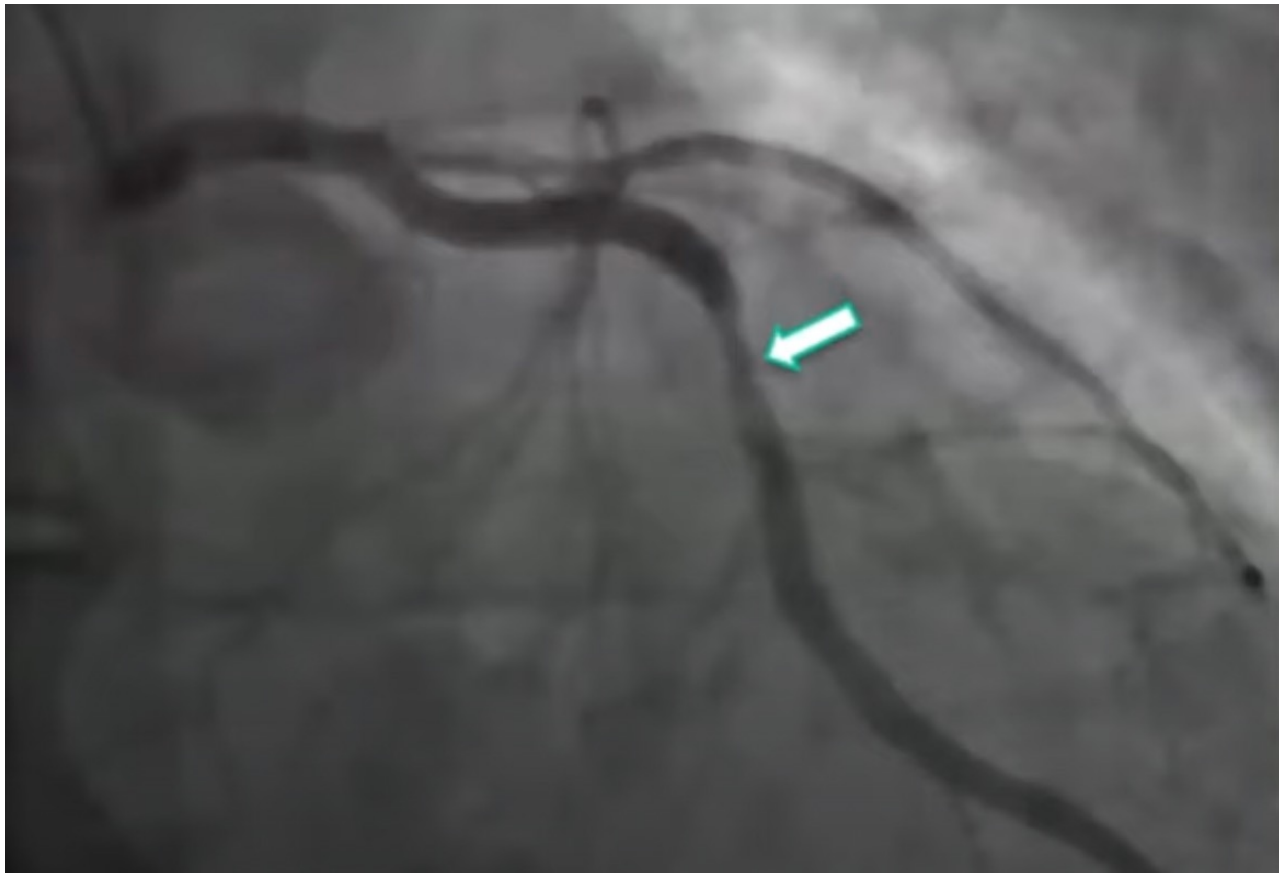
Joe Crowe, MD


November 27,1996
July 22, 1999
Distal LAD

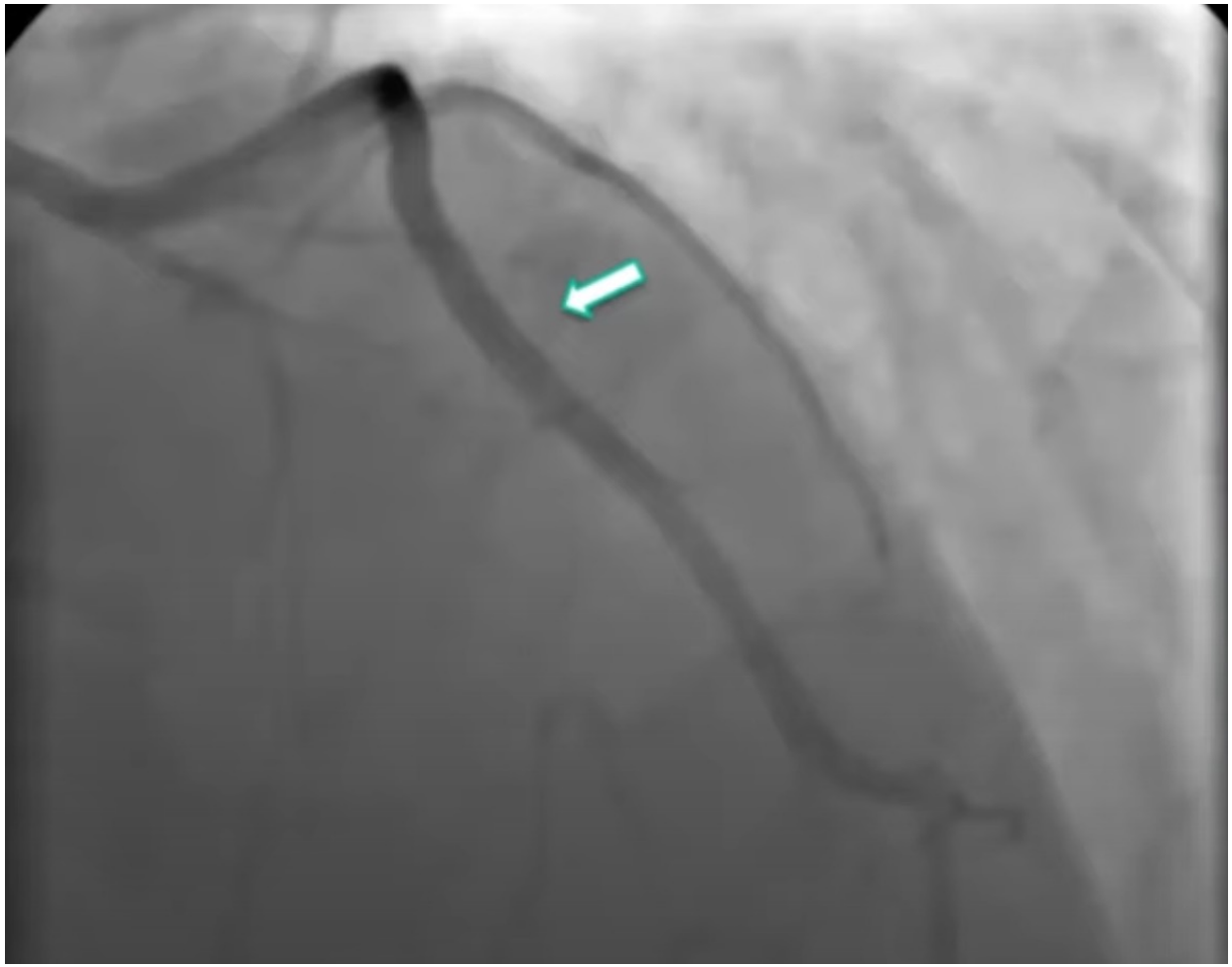
July 14, 2017 | 80% Occluded



July 2, 2018 | 40% Occluded



January 20, 2020 | No Occlusion



Cleveland Clinic Study

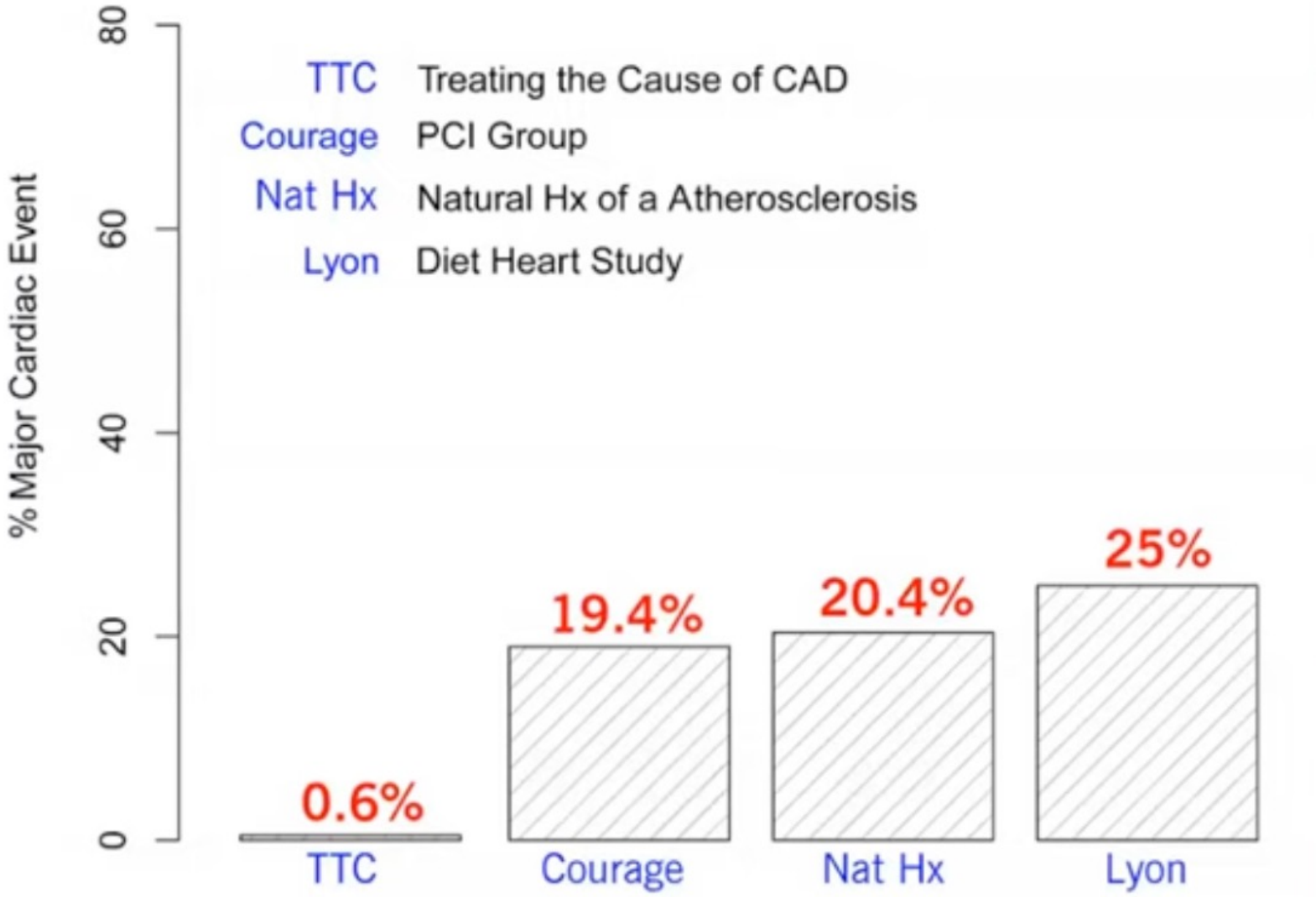
Caldwell Esselstyn, Jr., MD

- 49 coronary events in 8 years prior to study
  - Increased angina 18
  - Angiographic disease progression 13
  - Bypass surgery 7
  - Infarctions 4
  - Strokes 3
  - Angioplasty 2
  - Worsening Stress Test 2
- ZERO coronary events in 17 compliant patients during 12 years of study

Cleveland Clinic Study

Caldwell Esselstyn, Jr., MD

- Repeated study on larger group of 200 in 2014
- 177 adherent, 21 non-adherent, 2 lost to follow up
- Recurrent coronary events
  - Adherent group 0.6%
  - Non-adherent group 62%


Recurrent Major Cardiac Events Study Comparison
% Major Cardiac Event
0
20
40
60
80
TTC Treating the Cause of CAD
Courage PCI Group
Nat Hx Natural Hx of a Atherosclerosis
Lyon Diet Heart Study
0.6%
19.4%
20.4%
25%
TTC
Courage
Nat Hx
Lyon

Cleveland Clinic Study

Caldwell Esselstyn, Jr., MD

- Repeated study on larger group of 200 in 2014
- 177 adherent, 21 non-adherent, 2 lost to follow up
- Recurrent coronary events
  - Adherent group 0.6%
  - Non-adherent group 62%
- Outcomes of eating whole food, plant-based diet:
  - No mortality
  - No morbidity
  - No added cost
  - Benefits continue to improve with time


Let Food Be Thy Medicine
Hippocrates

Questions?

WFPB Diet Resources

What are Plant-Based Foods?

Legumes
navy beans, peas, lentils, chickpeas

Bulbs
onion, garlic, shallots

Flowers
cauliflower, broccoli, artichoke

Fruits
tomato, orange, kiwi

Stems
celery, rhubarb, asparagus

Leaves
lettuce, spinach, arugula

Roots
beet, potato, carrot

Whole Grains
wheat, brown rice, rye

Mushrooms
portobello, button, shiitake

Nuts
pecan, cashew, walnut

What About Plant-Based Processed Foods?

Plant Fragments
sugar, oil, refined flours

Plant-Based Processed Foods
potato chips, Oreos, etc.

- Overwhelmingly comprised of fat and refined carbohydrates (sugar, white flours)
- To enhance their addictive nature, long shelf-life, or visual appeal, these foods rely on artificial ingredients such as preservatives, colors, or flavors
- Very low in nutrients due to lacking their original fiber, vitamins and minerals
- A significant part of most Western diets, including diets ranging from vegans and vegetarians, to omnivores

Animal-Based Diets

- Elevate blood cholesterol levels
- Promote formation of diseases such as diabetes and heart disease
- Enhance likelihood of osteoporosis
- Increase production of growth hormones
- Promotes tumor development
- Pro-inflammatory
- Usually high in saturated and animal fats

1.Ornish D, Scherwitz LW, Billings JH, Gould L, et al. Intensive lifestyle changes for reversal of coronary heart disease. *JAMA*. 1998; 280: 2001-7.

2.Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Jaster B, Seidl K, Green AA, Talpers S. A low-fat, vegan diet improves glycemic control and cardiovascular risk factors in a randomized clinical trial in individuals with type 2 diabetes. *Diab Care*. 2006; 29:1777-1783.

3.Adlercreutz H. Western diet and Western diseases: some hormonal and biochemical mechanisms and associations. *Scand. J. Clin. Lab. Invest.* 1990; 50(Suppl.201): 3–23.

4.Dunaif GE, Campbell TC. Dietary protein level and aflatoxin B1-induced preneoplastic hepatic lesions in the rat. *J. Nutr.* 1987; 117: 1298–1302.

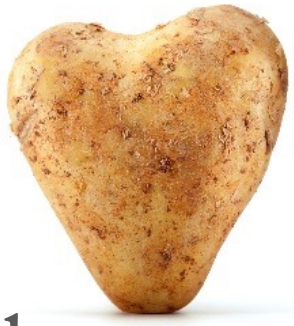
Whole Food, Plant-Based Diets

- Prevent, treat, or reverse some of our leading causes of death, including heart disease, type 2 diabetes, and high blood pressure
- Are anti-inflammatory
- Reduce body weight
- Are good for the environment

- Are low in saturated fat, free of cholesterol, and rich in fiber, vitamins, minerals and antioxidants.
- Does not require calorie counting or regularly fighting against hunger

1.Barnard ND, Katcher HI, Jenkins DJA, Cohen J, Turner-McGrievy G. Vegetarian and vegan diets in type 2 diabetes management. *Nutr Rev.*2009;67:255-263.
2.pilot study. *The Lancet Oncology.* 2013; 14(11): 1112-1120.
3.Esselstyn CB Jr., Gendy G, Doyle J, Golubic M, Roizen MF. A way to reverse CAD? *J Fam Pract.* 2014 July; 63(7): 356-364.
4.Garnett T. Where are the best opportunities for reducing greenhouse gas emissions in the food system (including the food chain)? *Food Policy.* 2011; 36(Suppl 1): S23-S32.

Beyond Animal Protein



A plant-based diet
with a variety of whole foods
will naturally contain
enough protein.

Eat

Avoid

What About Caloric Density?

Fruit & Vegetables	Beans, Grains & Potatoes	Animal Products	Cheese	Oils
				
400 CALORIES	400 CALORIES	400 CALORIES	400 CALORIES	400 CALORIES