



Session 12 PD, The Nutritional Reversal of Cardiovascular Disease: Fact or Fiction?

Presenters:

Ken C. Beckman, ASA, ACAS, MAAA
Dr. Caldwell Esselstyn, Jr.

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[SOA Presentation Disclaimer](#)

The Nutritional Reversal of Cardiovascular Disease: Fact or Fiction?

Ken Beckman, ASA, ACAS, MAAA, CFA
June 12, 2017



SOCIETY OF
ACTUARIES

Health Care Costs: 18% of U.S. GDP, 86% due to chronic conditions¹

The Problem:

- Lack of widespread knowledge that most chronic conditions can be prevented and even reversed
- Providers are paid for pills/procedures/tests that do not address the cause of chronic health conditions
- Focus is on managing chronic conditions through medication compliance and improved care coordination (e.g. CMS/AHIP quality measures released February 2016²)
- Lack of monetary incentives for providers to prevent and reverse chronic disease

The Solution:

- Educate insurers, health care providers, and the public that many chronic conditions need not exist
- Compensate providers based on their ability to improve patient health
- Treat the cause of chronic disease using a low-cost, proven prescription with no negative side effects

¹<https://www.cdc.gov/chronicdisease/overview/>

²<https://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2016-Press-releases-items/2016-02-16.html>

What if...

A single prescription could prevent and in many cases reverse all of the following¹:

- Cardiovascular (Heart) Disease (#1 cause of death)²
- Diabetes (prevalence rate up more than 600% since 1960)³
- Obesity (38% of adults are obese, 70% overweight)⁴
- High Blood Pressure (70% of adults age 65+ have hypertension, #1 reason for visiting PCP)⁵
- Osteoarthritis / Rheumatoid Arthritis (#1 cause of disability)⁶
- Cancer (some forms)
- Erectile Dysfunction
- Constipation/IBS
- Acid Reflux/GERD
- Dementia/Alzheimer's
- Asthma

****side effects include increased energy, less need for sleep, improved digestion**

¹<http://www.ynut.life/en/philosophy/a-wise-choice/>

²Centers for Disease Control, National Center for Health Statistics, Mortality in the United States, 2015, (December 2016).

³Centers for Disease Control Division of Diabetes Translation, *Long-Term Trends in Diagnosed Diabetes*, (April 2016).

⁴https://www.cdc.gov/nchs/data/hestat/obesity_adult_13_14/obesity_adult_13_14.pdf

⁵<https://www.cdc.gov/media/releases/2016/p0913-blood-pressure.html>

⁶<https://www.cdc.gov/chronicdisease/overview/>

The Prescription: Whole Food Plant-Based Nutrition (WFPBN)

Include:

Whole Grains
Legumes (Beans, Peas, Lentils)
Vegetables
Fruits

Exclude:

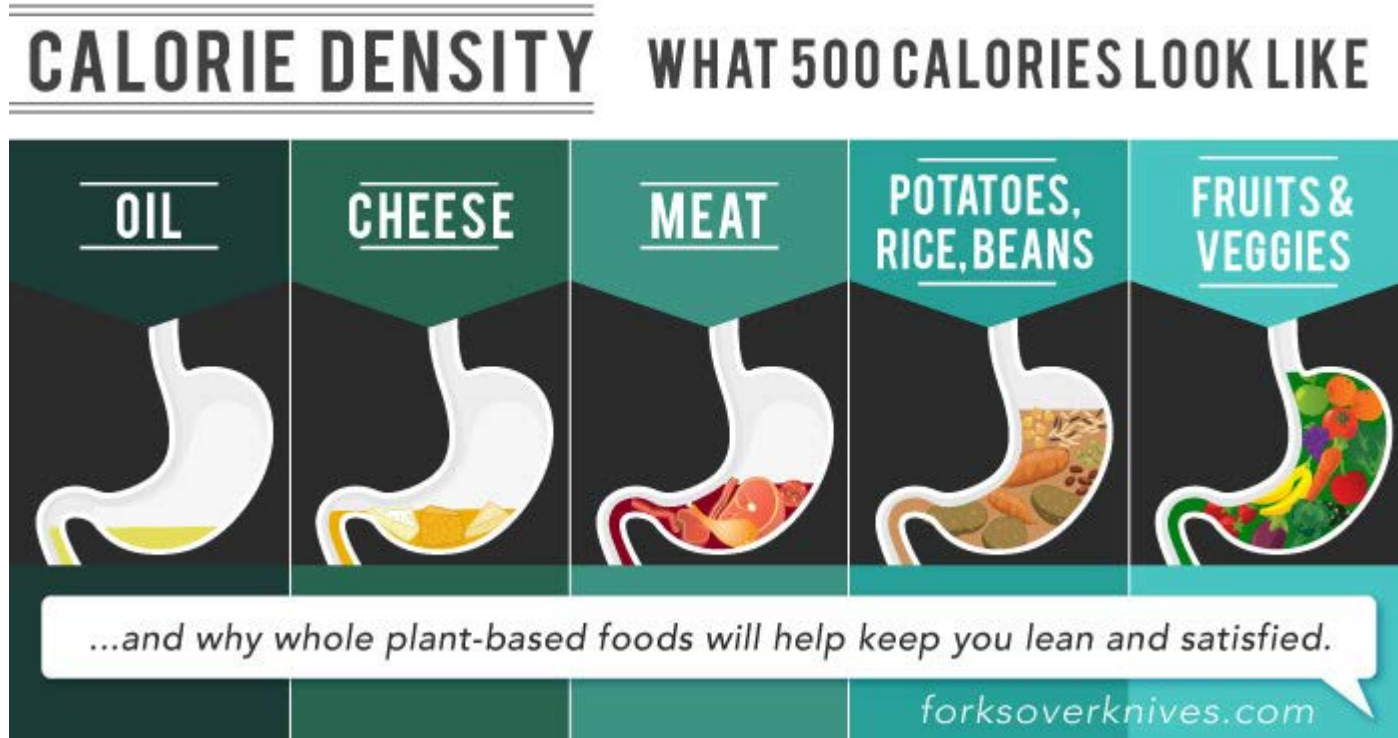
Meat (beef, chicken, pork, fish, etc.)
Dairy products (milk, cheese, yogurt, etc.)
Eggs
Oils (olive, safflower, canola, coconut, etc.)

- Choose whole foods and avoid refined and processed foods
(e.g. brown instead of white rice, fruit instead of fruit juice)
- No calorie counting required--eat until satisfied and eat when hungry

“Just eat lots of plant foods; your body will do the math for you.” – T. Colin Campbell

“Eat whole food. As much as you want. Only plants.” – Rip Esselstyn

Why does it work? How is it sustainable?



What do you eat?



Will health care providers prescribe WFPBN?

Non Sequitur by Wiley Miller¹



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November 19, 2014 from www.gocomics.com

¹ <http://www.gocomics.com/nonsequitur/2014/11/19>

Ideas for Insurers to encourage adoption of WFPBN treatment (insurers include Medicare, Medicaid, self-insured groups)

- Make insureds aware of the concept (“Ask your doctor if WFPBN is right for you.”)
- Require patients be advised of WFPBN treatment option before procedures such as bypass or stents
- Develop long-term financial incentives for physicians/others to help patients achieve/maintain optimal health

Role of Actuaries

Design systems that compensate providers for the value patients receive (measured by improvement in health):

(1) Relate objective measures of health (e.g. BMI, cholesterol, BP, A1C, CRP) to claim costs

Example: Each 1 point drop in A1C is worth \$1000 of claim cost

(2) Develop long-term financial incentives for providers tied to improvement in patient health

Example:

	2017	2018	2019	2020	2021
A1C reading:	7.5	6.5	5.5	5.5	5.5
Incentive payment to provider:		\$1000	\$2000	\$2000	\$2000

Fact or Fiction?

- (1) There are many different opinions and debate about effects of diet and nutrition that will never be fully settled, even within the scientific community
- (2) Only one approach—whole food plant-based nutrition—has been shown to reverse heart disease, diabetes, hypertension and many other chronic conditions.

What is the historical, scientific, and clinical evidence?

Treating the Cause to Prevent and Reverse Heart Disease

Caldwell B. Esselstyn Jr., M.D.

**Dr Esselstyn reports no known
financial conflicts.**

Absence of Coronary Artery Disease

- **Rural China**
- **Papua Highlanders**
- **Central Africa**
- **Tarahumara Indians**



Early Atherosclerosis Present in Virtually All Americans

Strong JP et al. Prevalence and extent of atherosclerosis in adolescents and young adults: Implications for prevention from the Pathobiological Determinants of Atherosclerosis in Youth Study. JAMA 1999 Feb 24; 281:727-35.



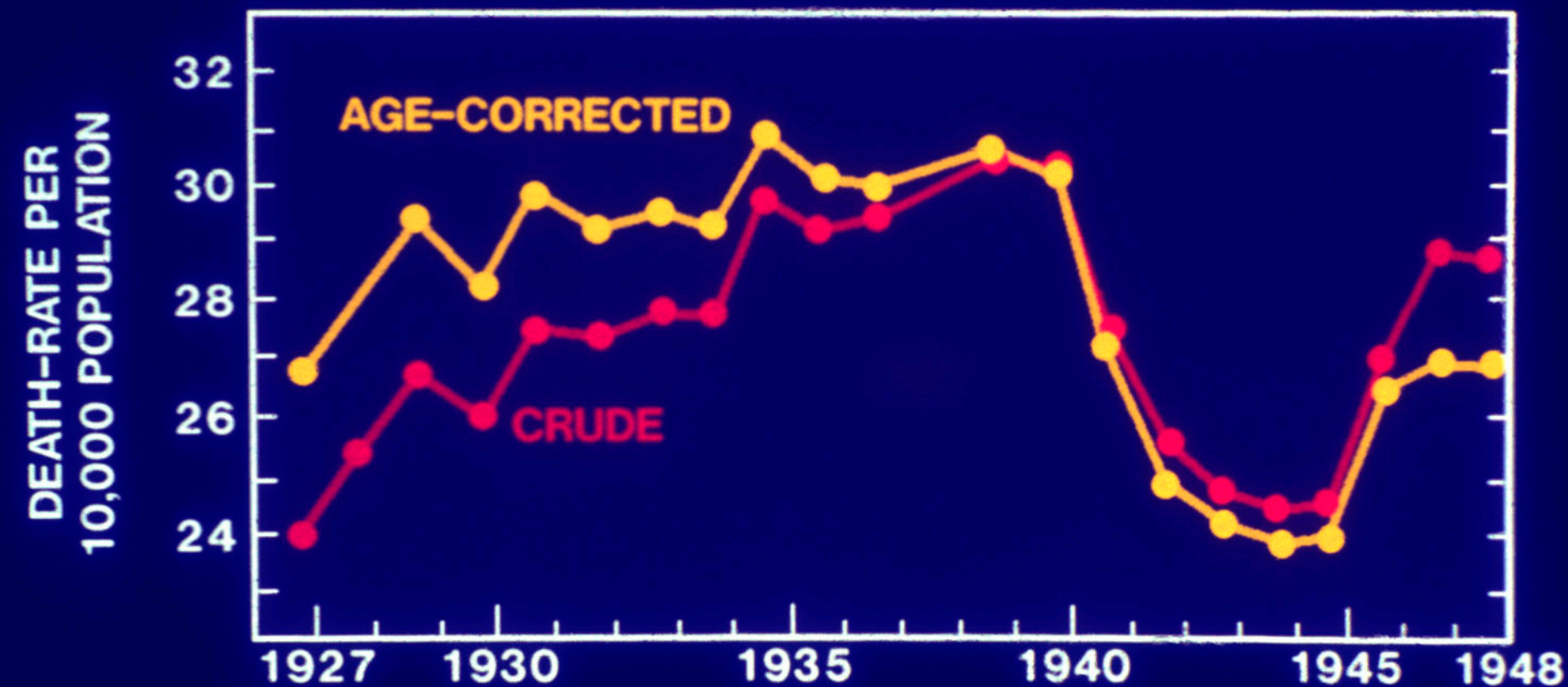
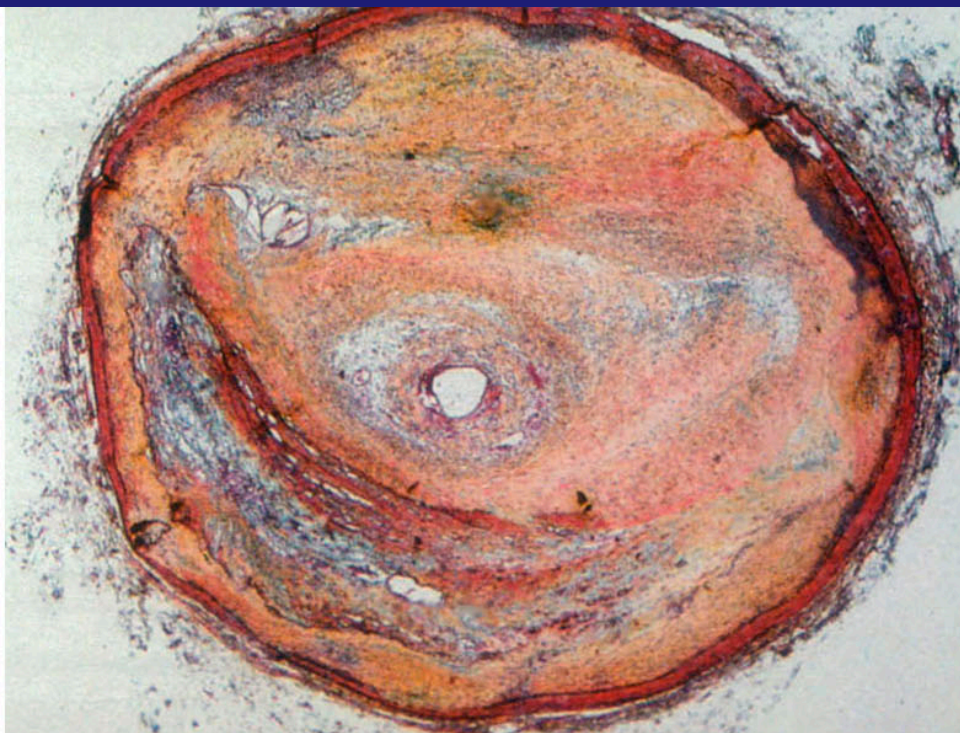
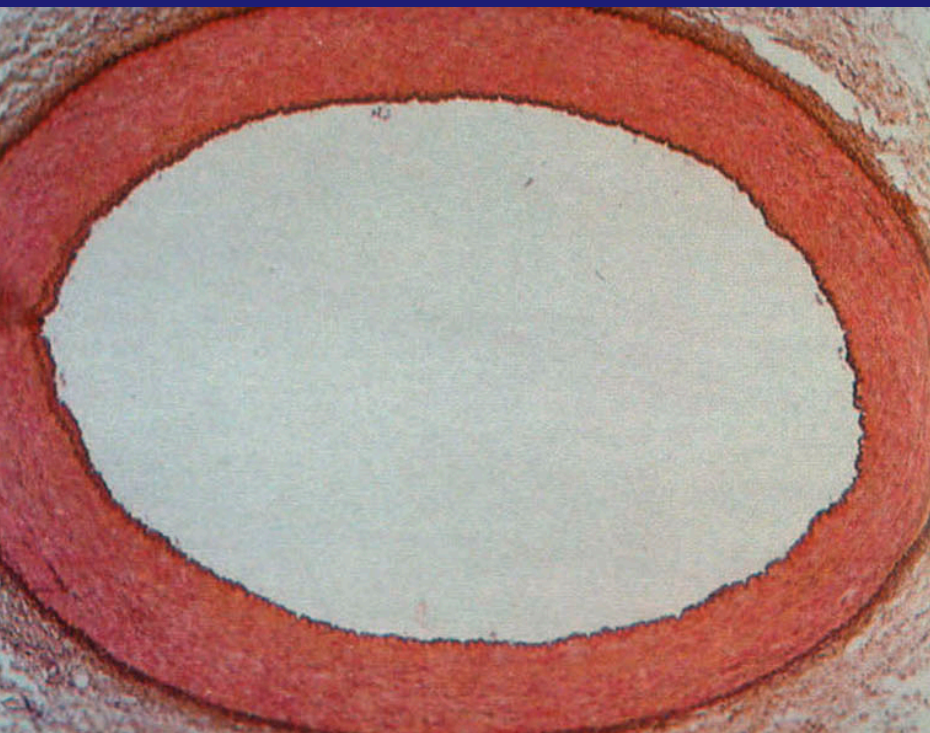
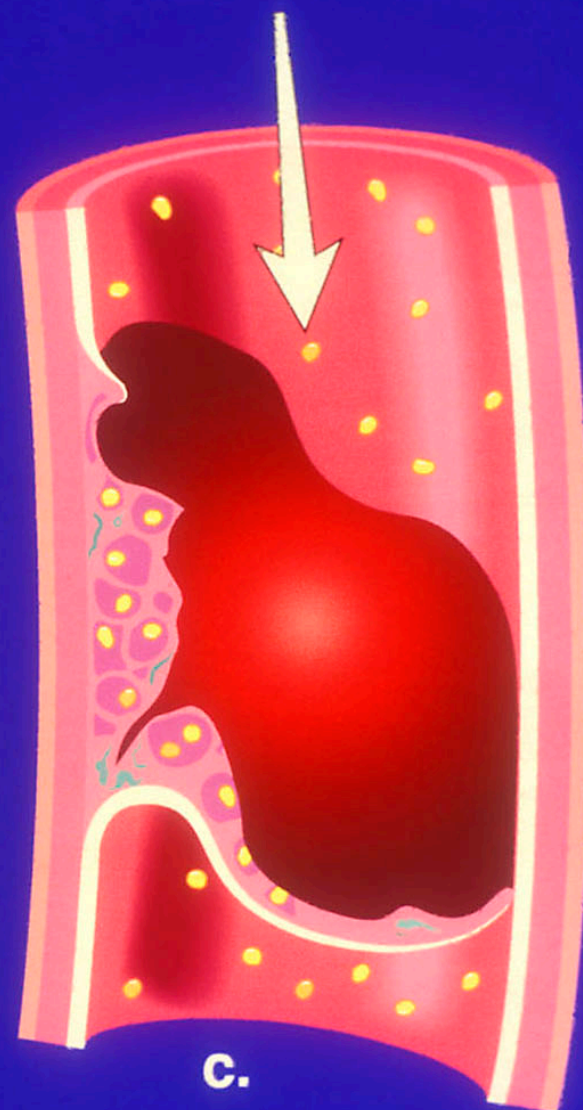
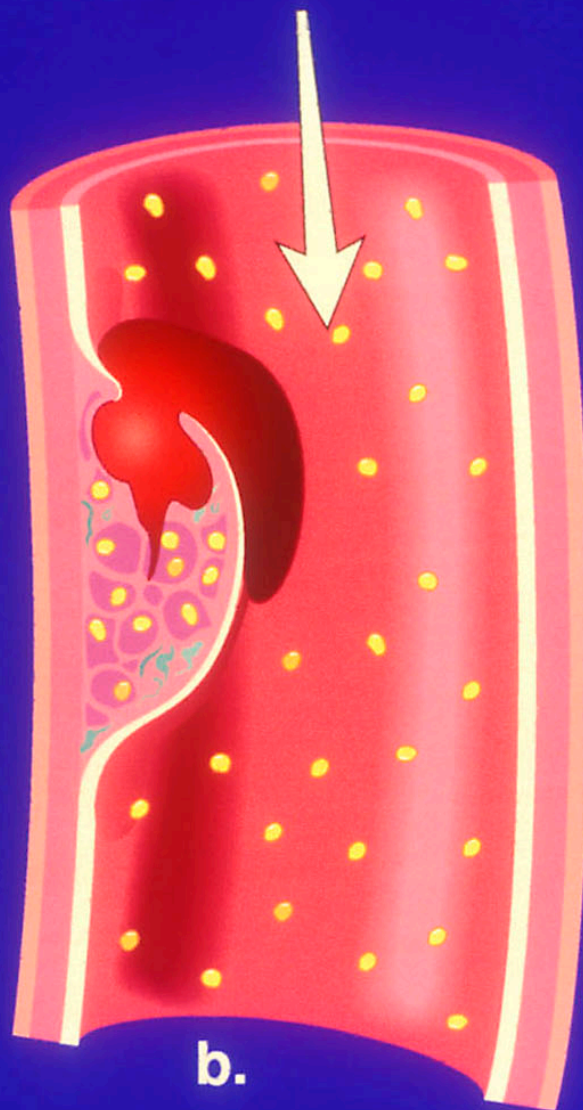
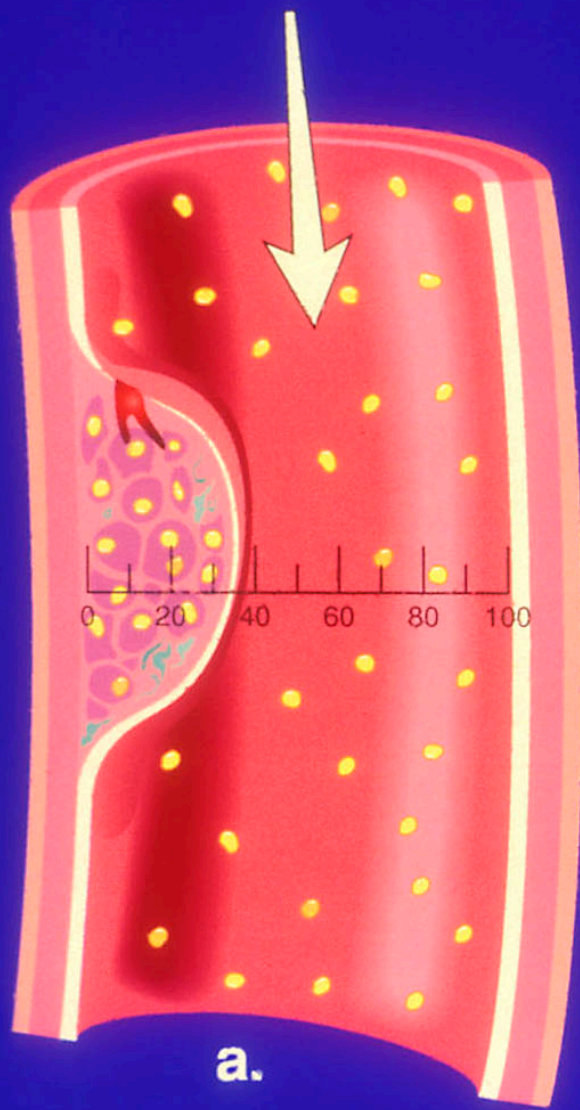
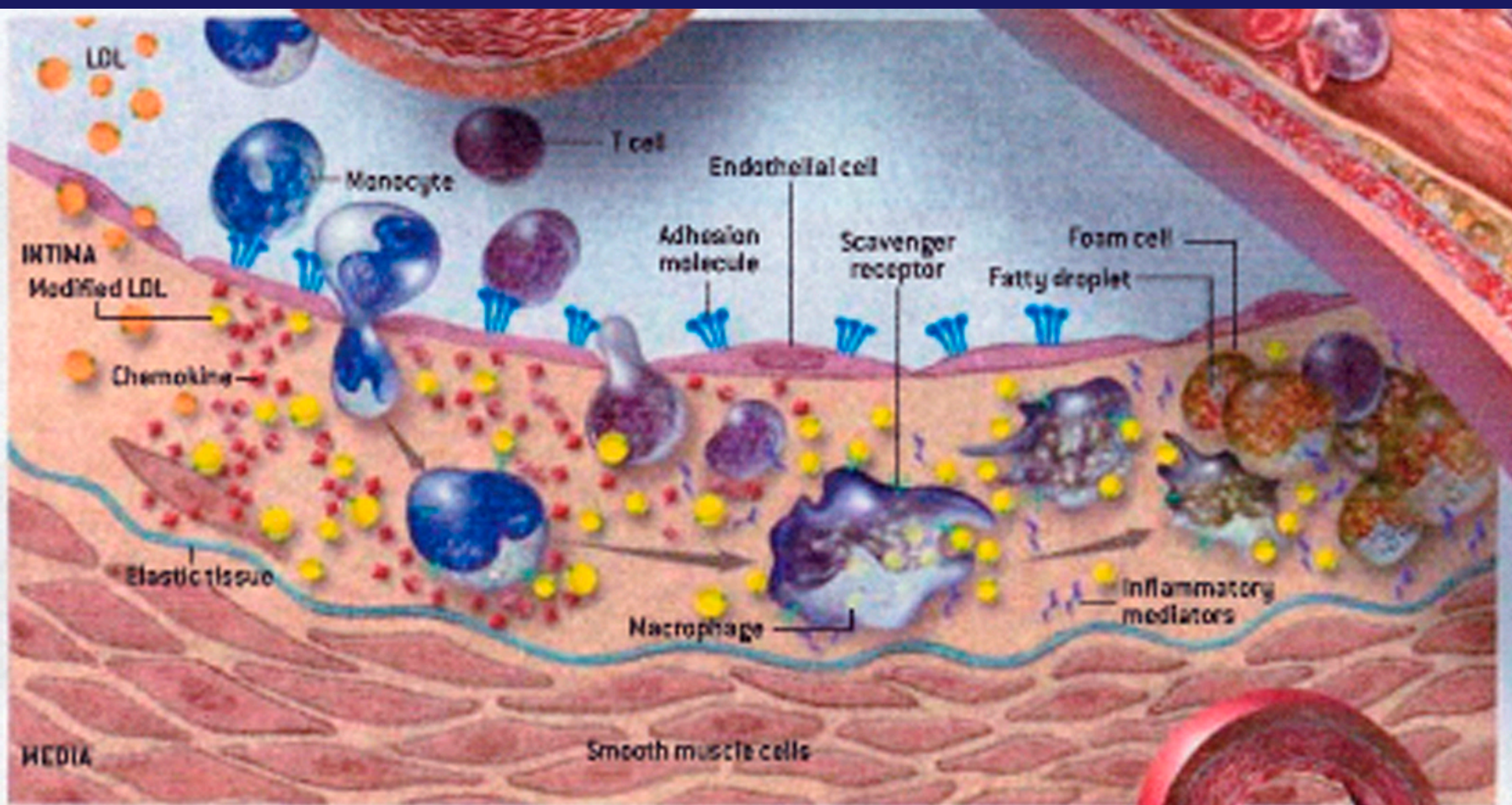


Fig. 1- Mortality from circulatory diseases in Norway in 1927-1948.
Standard population = population of Norway in 1940.





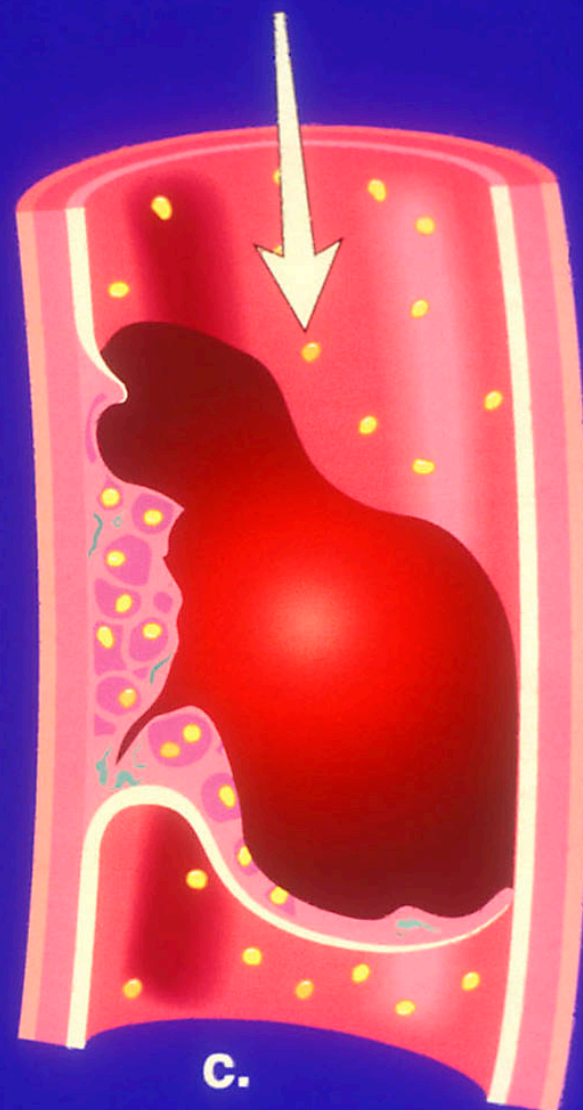
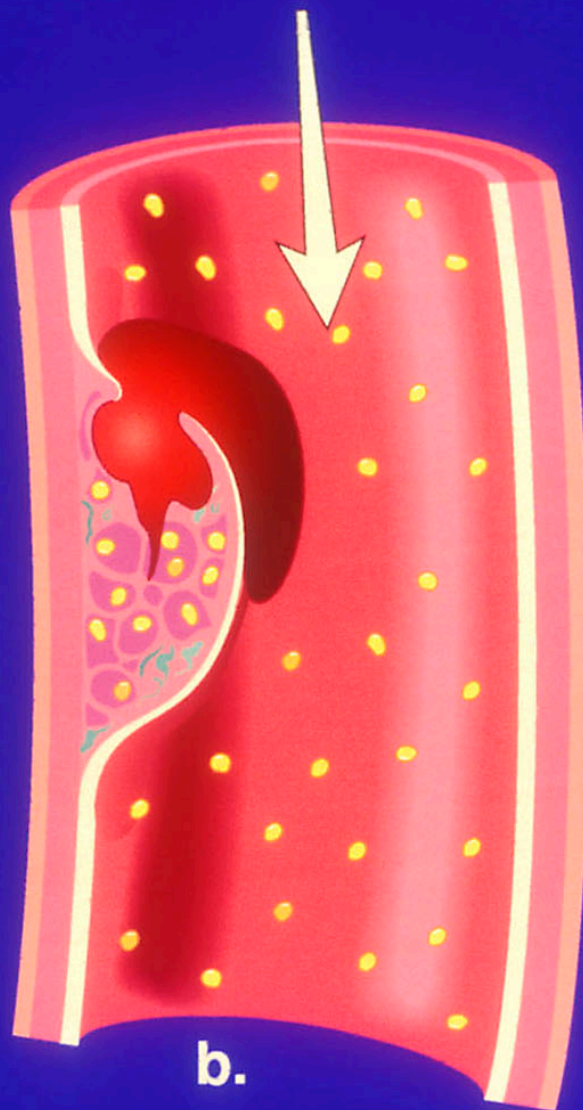
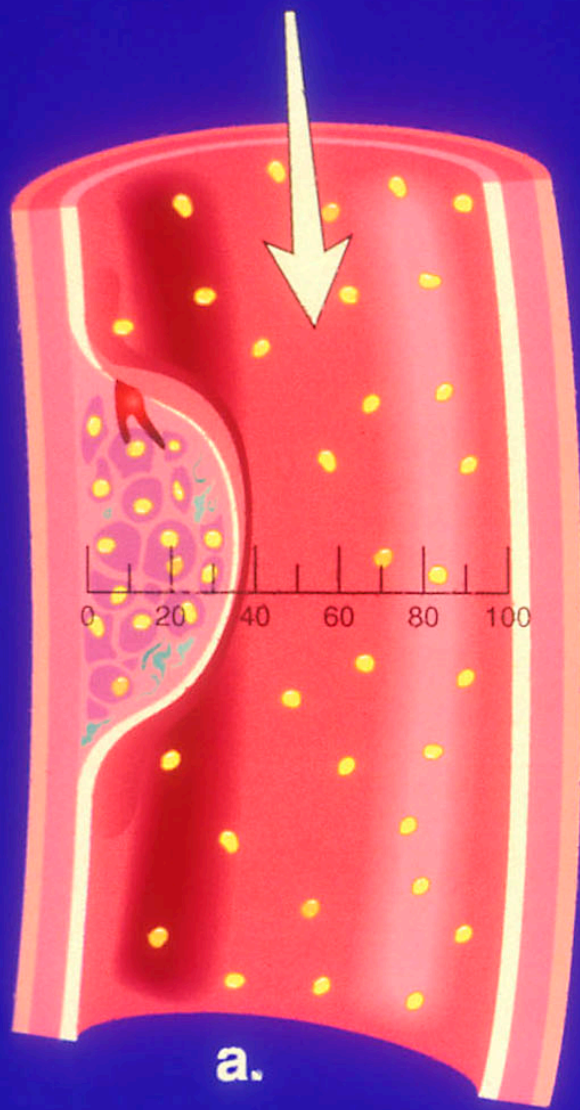


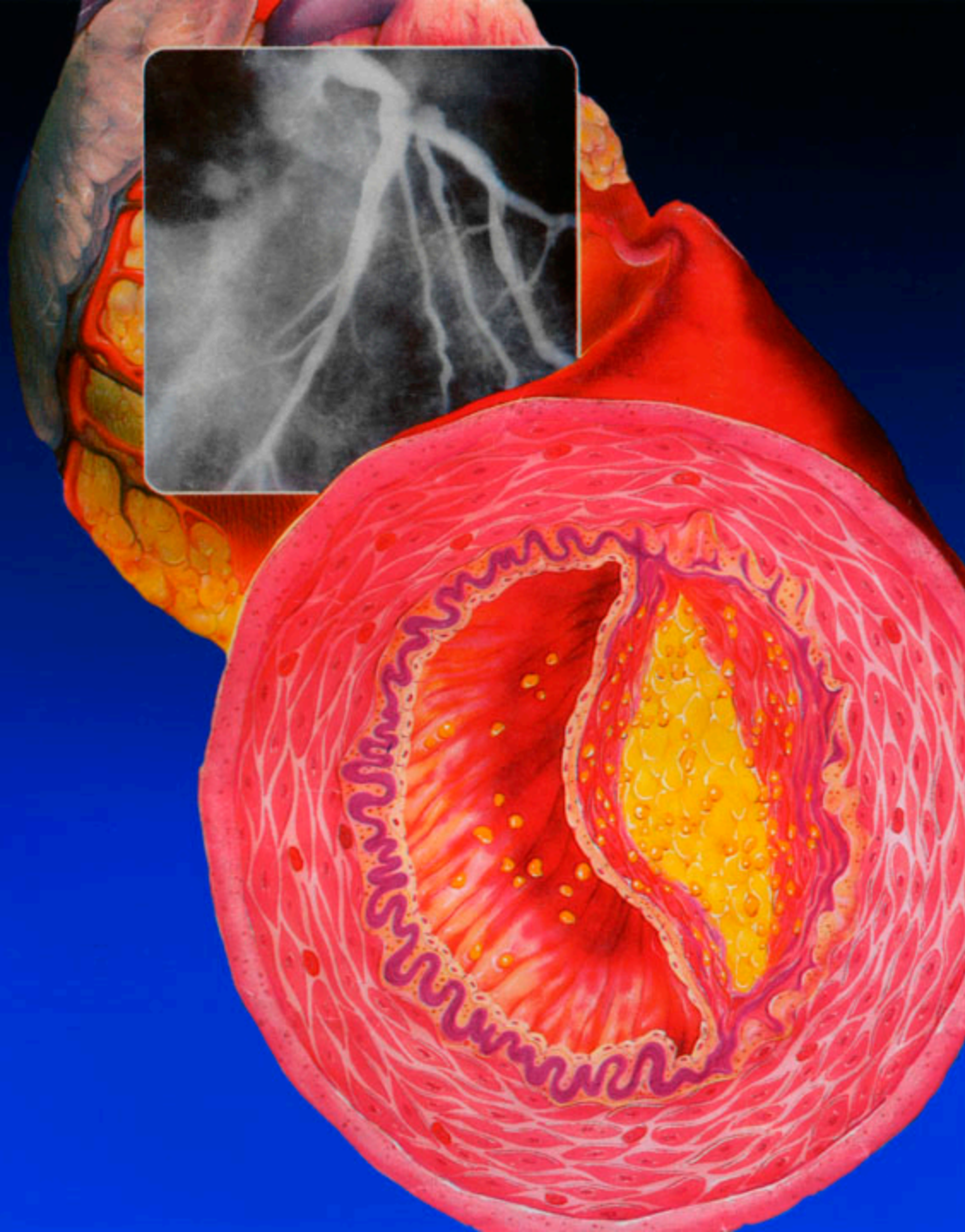
BIRTH OF A PLAQUE

1 Excess LDL particles accumulate in the artery wall and undergo chemical

2 In the intima, the monocytes mature into active macrophages. The macrophages







Nitric Oxide Functions

- 1. Prevents Stickiness**
- 2. Vasodilatation**
- 3. Avoids Arterial Thickening**
- 4. Prevents Blockages**
- 5. Prevents smooth muscle migration**
- 6. Destroys foam cells**

Treating The Cause

Endothelial Cell

Endothelial Progenitor Cell

HDL Cholesterol

**Dimethyl Arginine Dimethylamino
Hydrolase**

Participants 1985 - 1988

23 men, 1 woman with severe triple vessel coronary artery disease – age range 44 - 68

Method **Avoid**

- Oil
- Fish
- Fowl
- Meat
- Dairy
- Caffeinated
Coffee



ELSEVIER

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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

Poultry

Pork

Duck

Lamb

Venison

Shell Fish

Fish



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News

Carcinogenicity of consumption of red and processed meat

Véronique Bouvard, Dana Loomis, Kathryn Z Guyton, Yann Grosse, Fatiha El Ghissassi, Lamia Benbrahim-Tallaa, Neela Guha, Heidi Mattock, Kurt Straif on behalf of the International Agency for Research on Cancer Monograph Working Group

Published Online: 26 October 2015

Foods to be Included

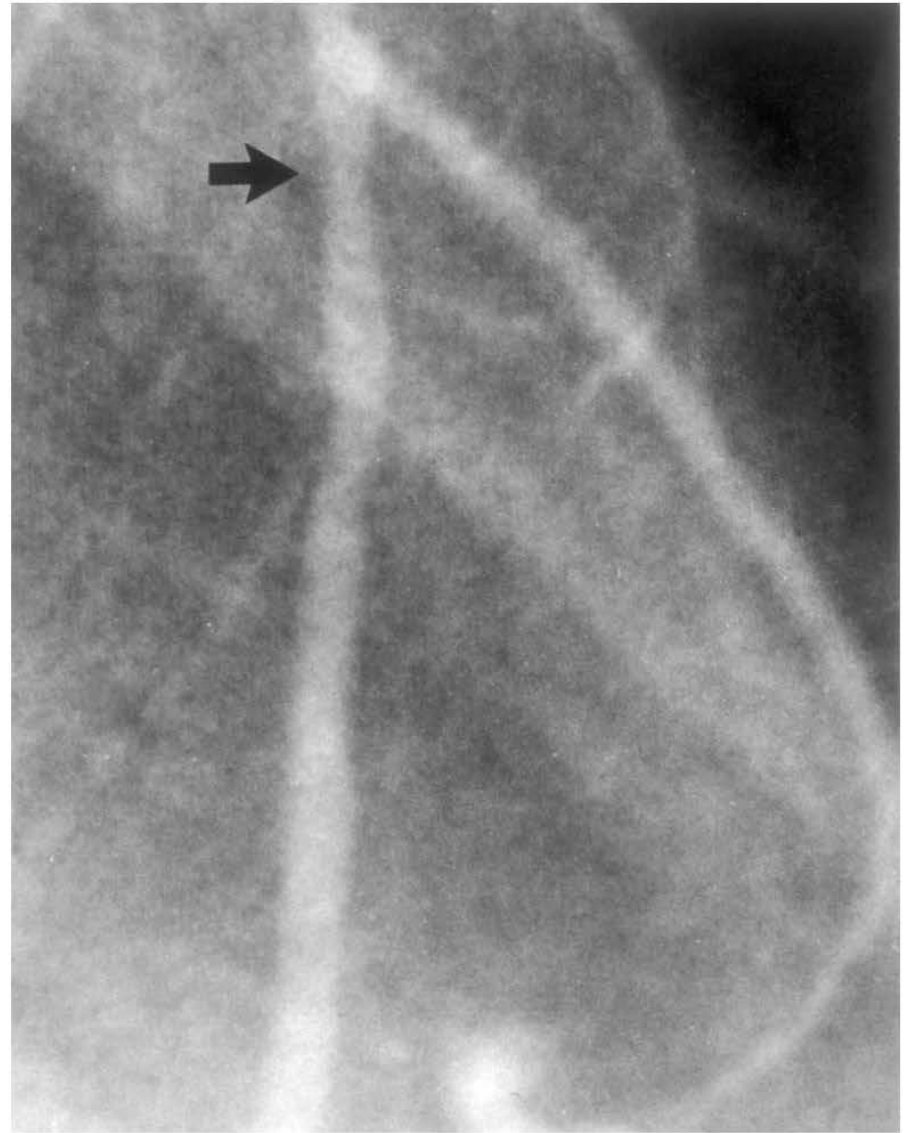
- **Whole Grains**
- **Legumes, lentils**
- **Vegetables**
- **Fruit**

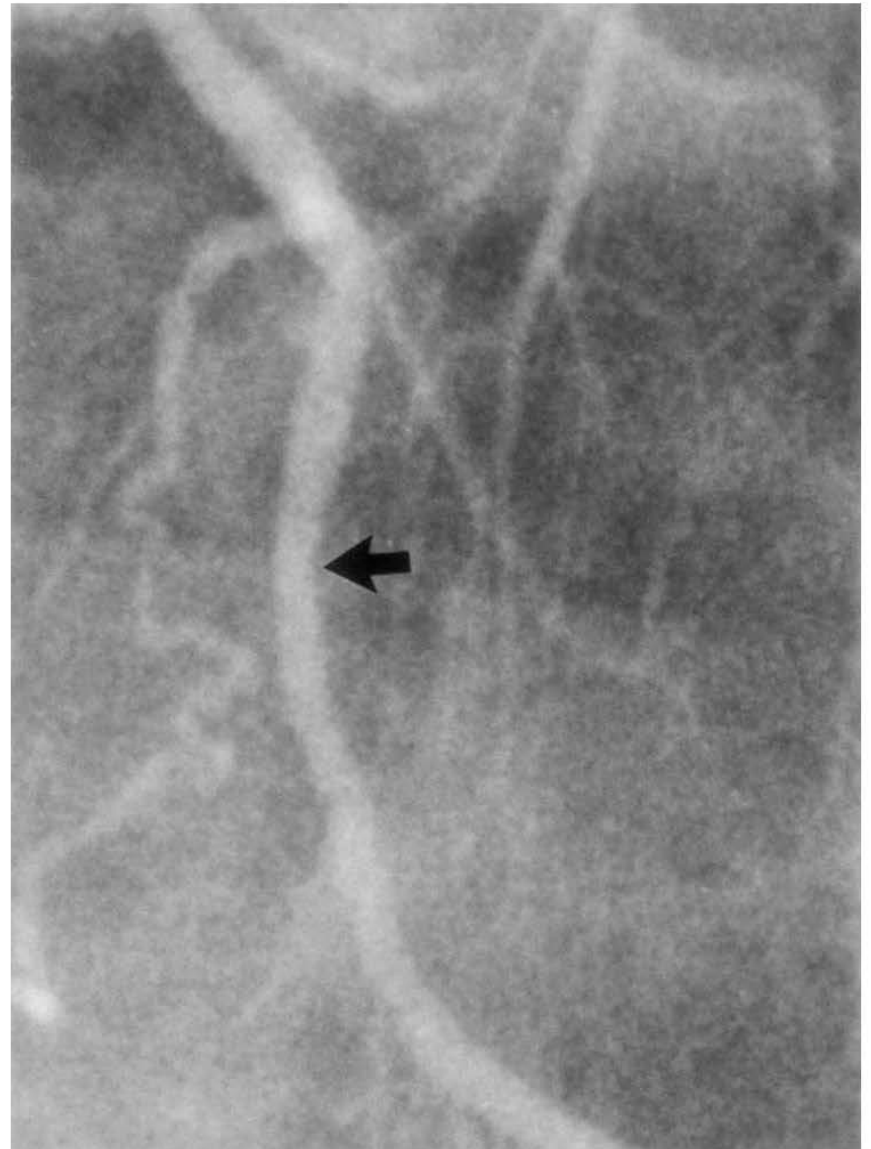


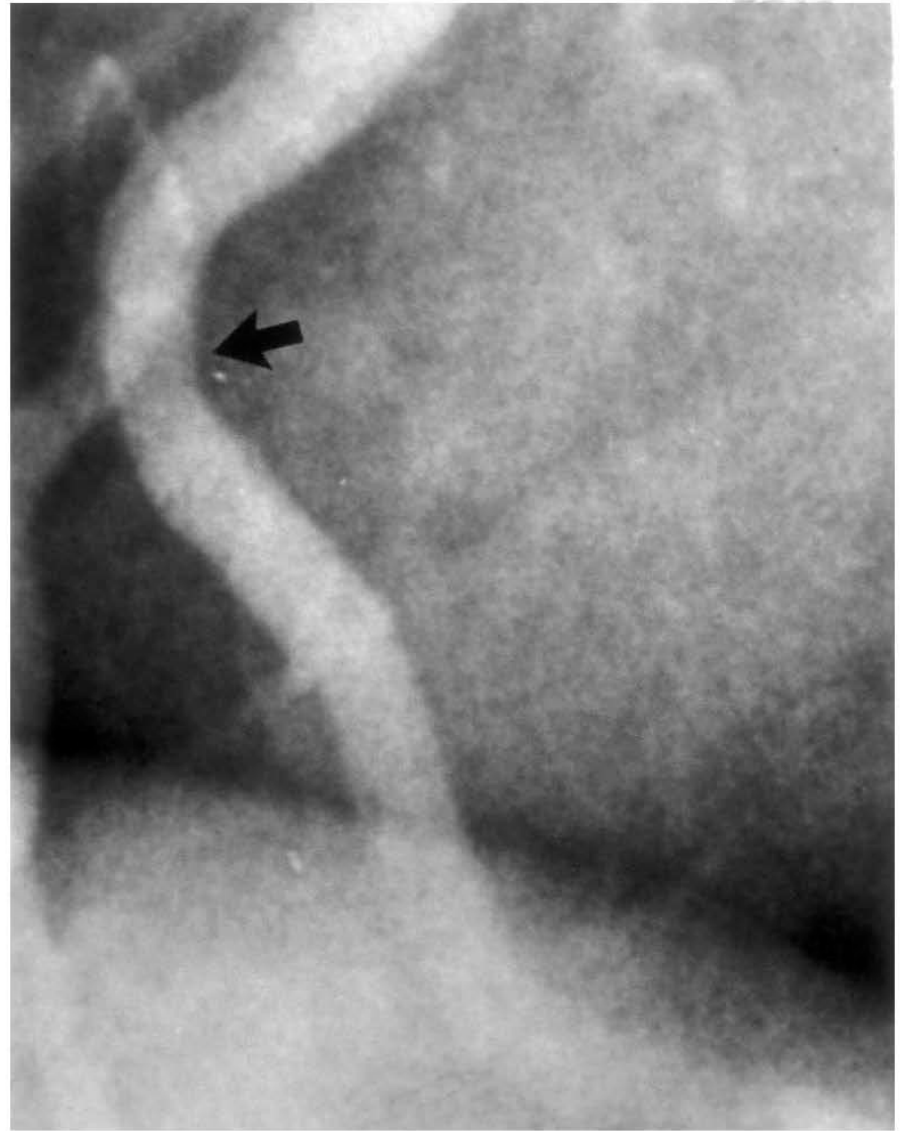
Original.



Chunky.



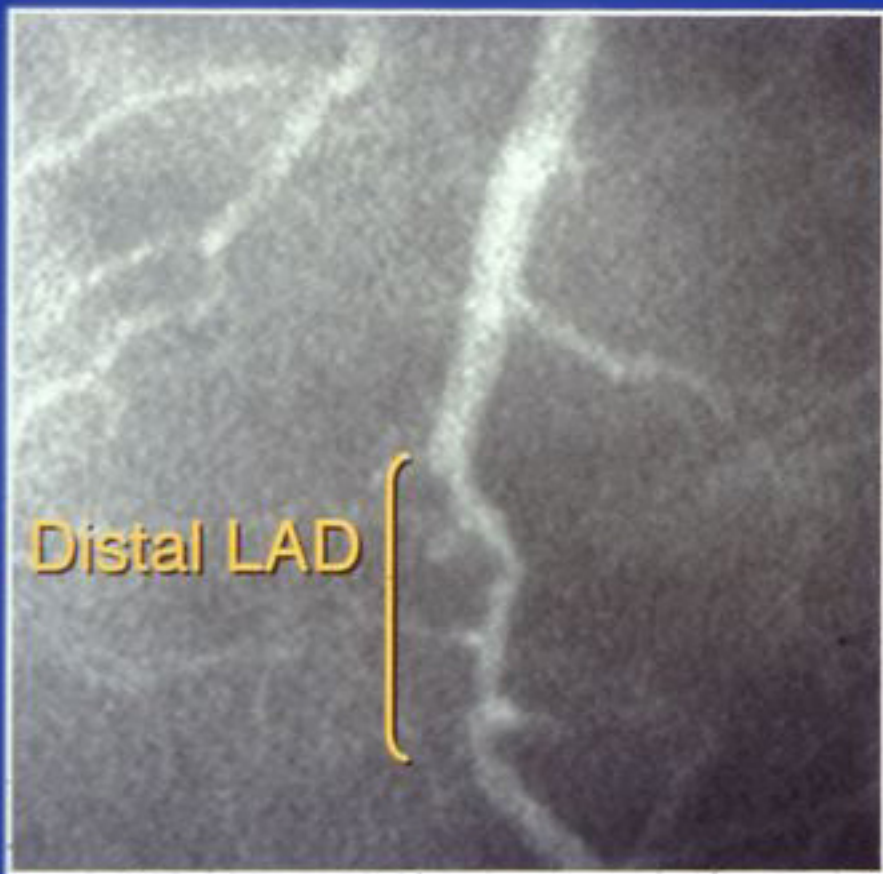






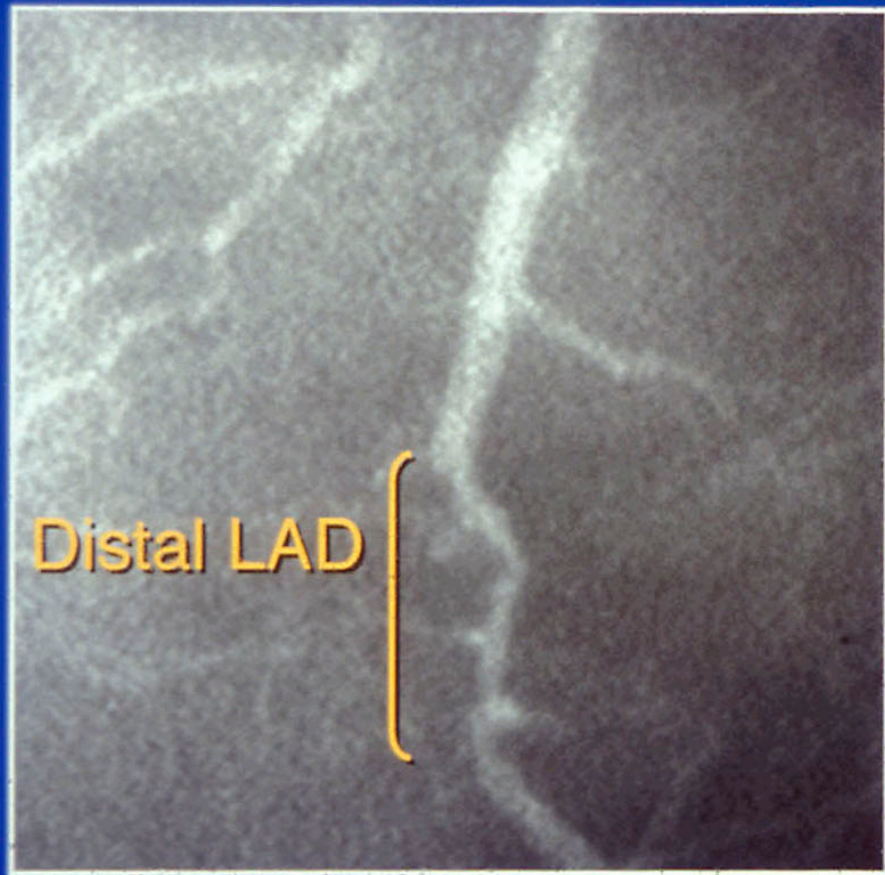
Reversal of Coronary Disease

November 27, 1996

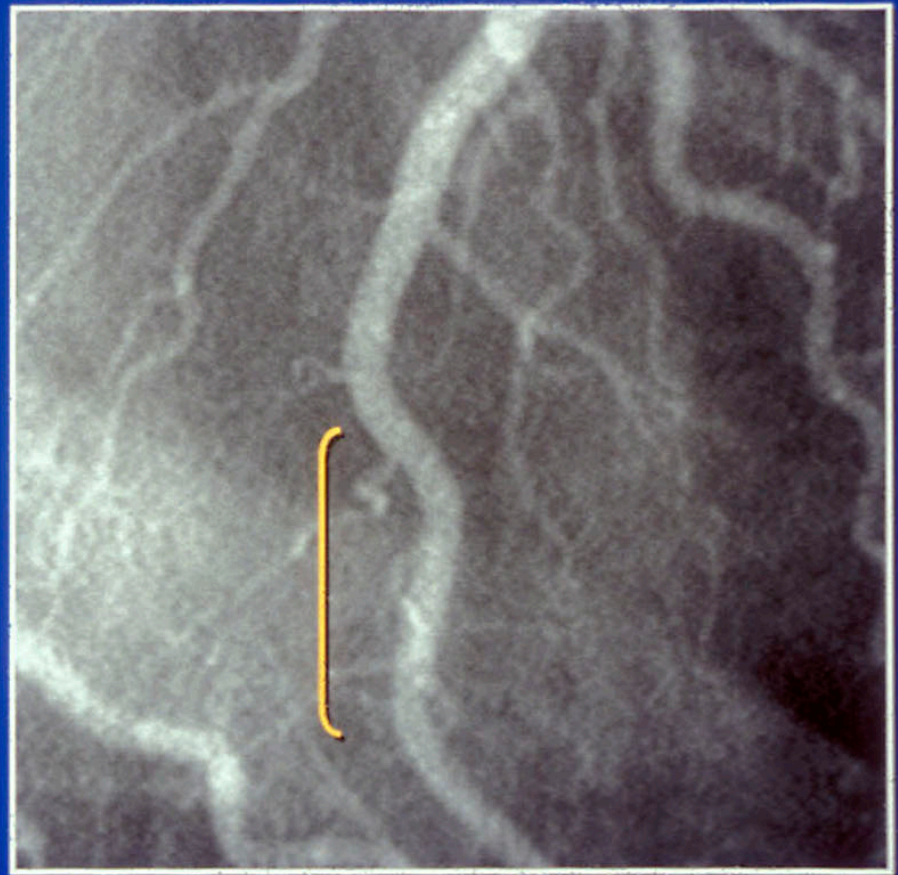


Reversal of Coronary Disease

November 27, 1996



July 22, 1999



8 Years Prior to Study

49 Coronary Events in 18 Patients

Increased angina	18
Angiographic disease progression	13
Bypass surgery	7
Infarctions	4
Strokes	3
Angioplasty	2
Worsening stress test	2

18 Patients Followed 12 Years

- **49 coronary events during 8 years prior to study**
- **None in 17 compliant patients during 12 years**

Caldwell B. Esselstyn Jr,
MD; Gina Gendy, MD;
Jonathan Doyle, MCS;
Mladen Golubic, MD,
PhD; Michael F. Roizen,
MD

The Wellness Institute
of the Cleveland Clinic,
Lyndhurst, Ohio

 aesselstyn@aol.com

*The authors reported no
potential conflict of interest
relevant to this article.*

ORIGINAL RESEARCH

A way to reverse CAD?

Though current medical and surgical treatments manage coronary artery disease, they do little to prevent or stop it. Nutritional intervention, as shown in our study and others, has halted and even reversed CAD.

Treating the Cause

3.75 Years Follow-Up

Lost to Follow Up	2
Adherent (89%)	177
Non-Adherent	<u>21</u>
TOTAL	200

Patients With Intervention (119)

Patients Avoiding Intervention (27)

Severity Index $146/177 = 82\%$

J Fam Prac Vol 63 July 2014

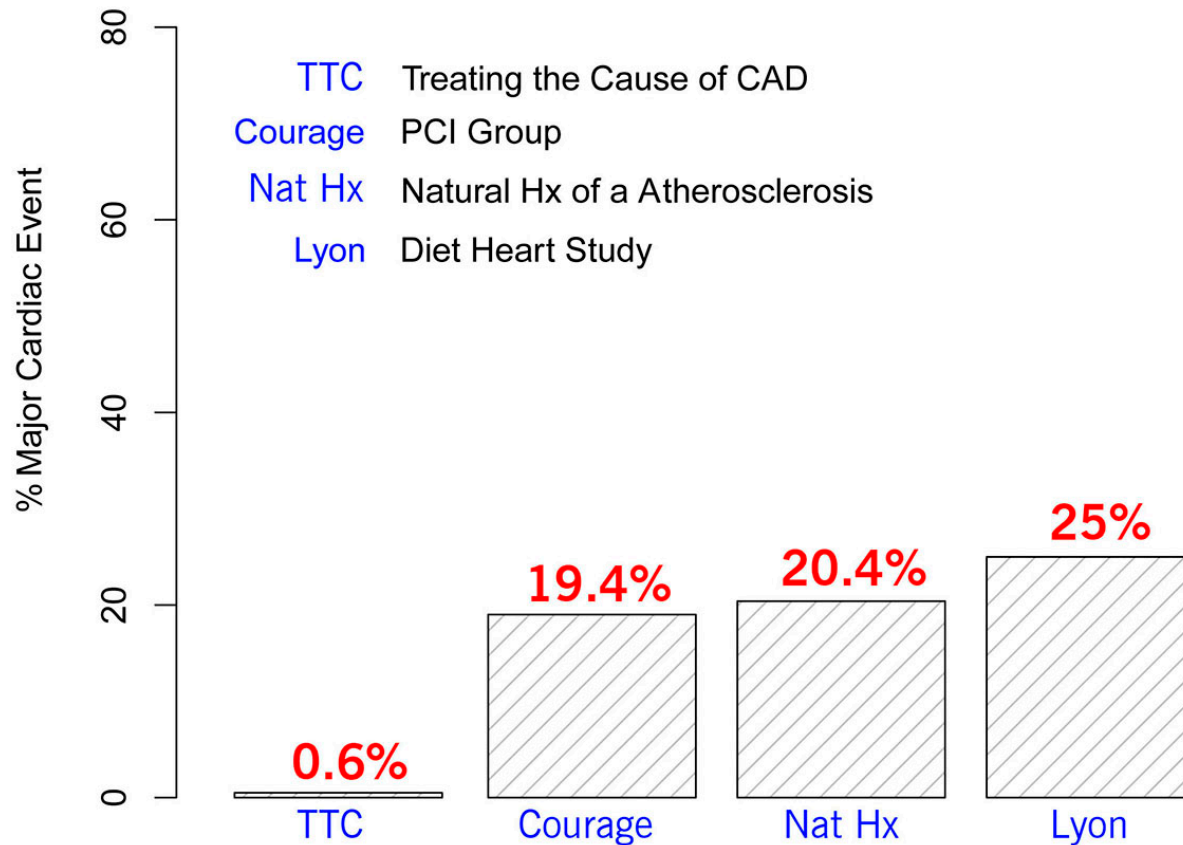
Recurrent Events(%)

Adherent	0.6
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Non-Adherent	62
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Treating The Cause

Recurrent Major Cardiac Events Study Comparison



EXPERIMENTAL & CLINICAL
Cardiology

EXPERIMENTAL & CLINICAL CARDIOLOGY

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2011

2014





*“Our daughter’s wedding
was 6 months after starting
a plant based diet.
There is no way Jim
would have been able to
dance all night if he
hadn’t changed his diet.”
- Jim’s wife*



Arrest and Reversal Outcomes

- **No mortality from the diet**
- **No morbidity from the diet**
- **Benefits improve with time**

Quality of Life Issues

Patients are empowered by the knowledge that they are in control of the disease that was destroying their lives

The New England Journal of Medicine

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Volume 328

JANUARY 21, 1993

Number 3

A POPULATION-BASED STUDY OF DEMENTIA IN 85-YEAR-OLDS

**INGMAR SKOOG, M.D., LARS NILSSON, M.D., PH.D., BO PALMERTZ, M.D., LARS-ARNE ANDREASSON, M.D.,
AND ALVAR SVANBORG, M.D., PH.D.**

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2-JAN-1995
MAGE 623
TUDY 12

MAGNETOM VISION
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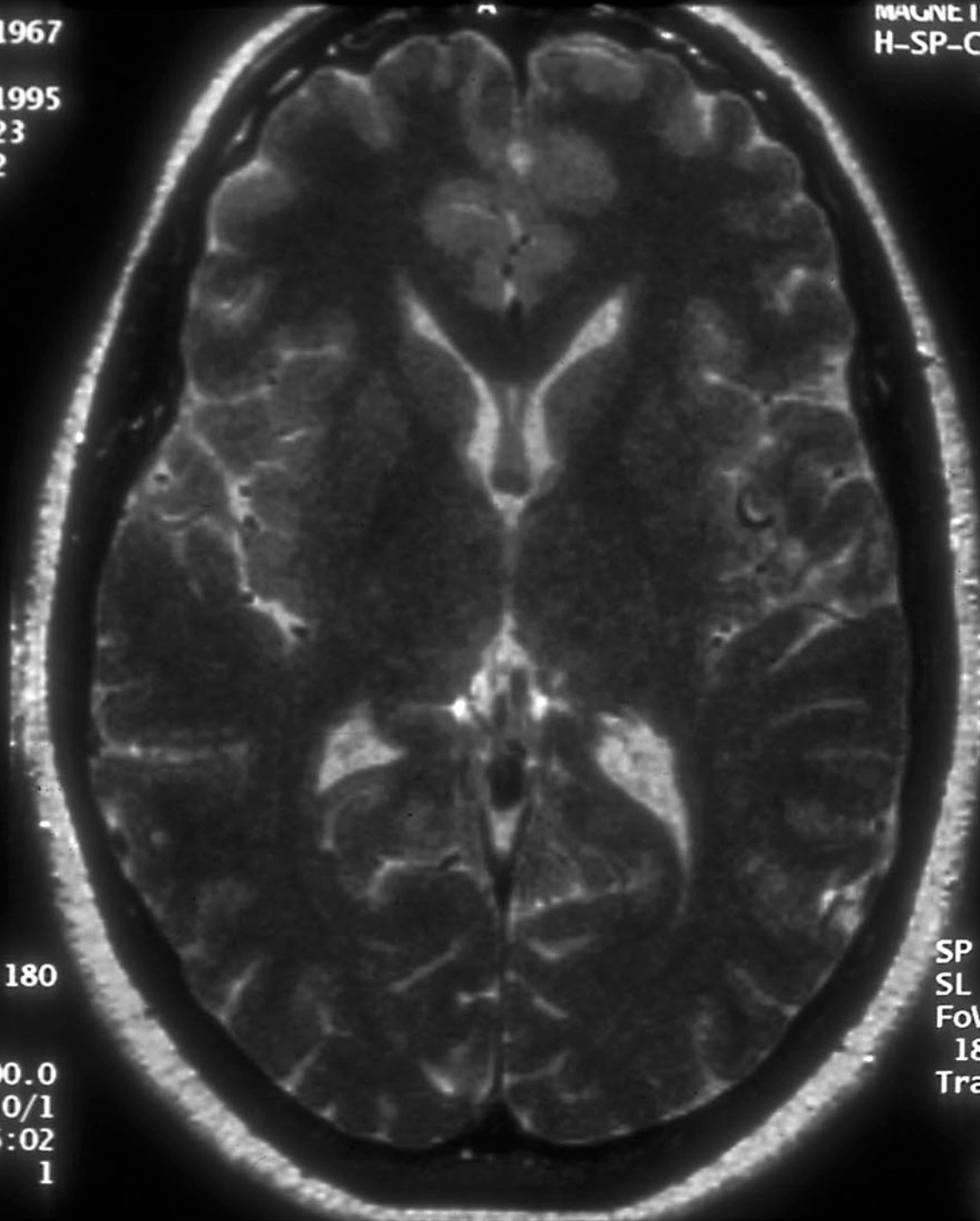
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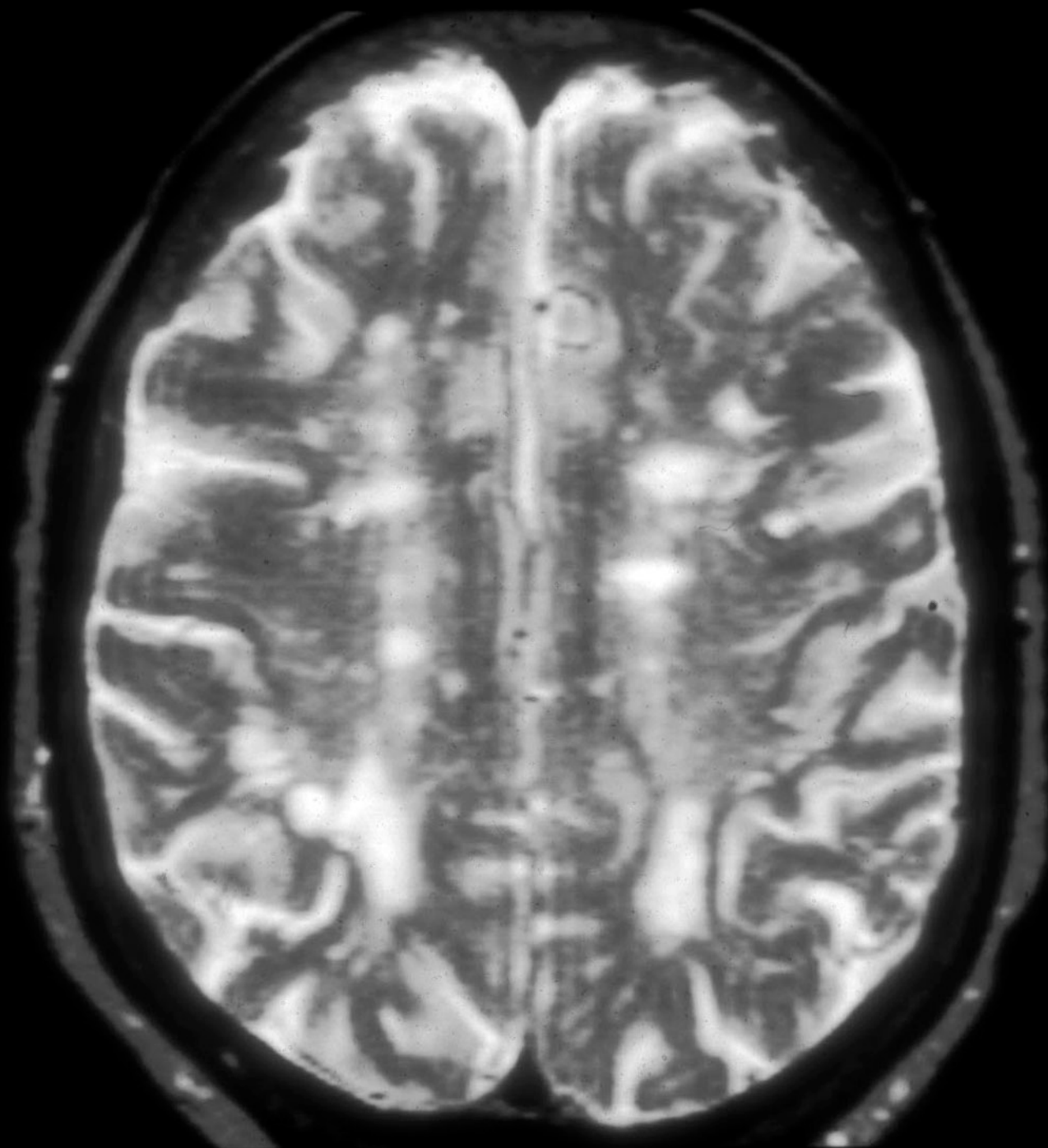
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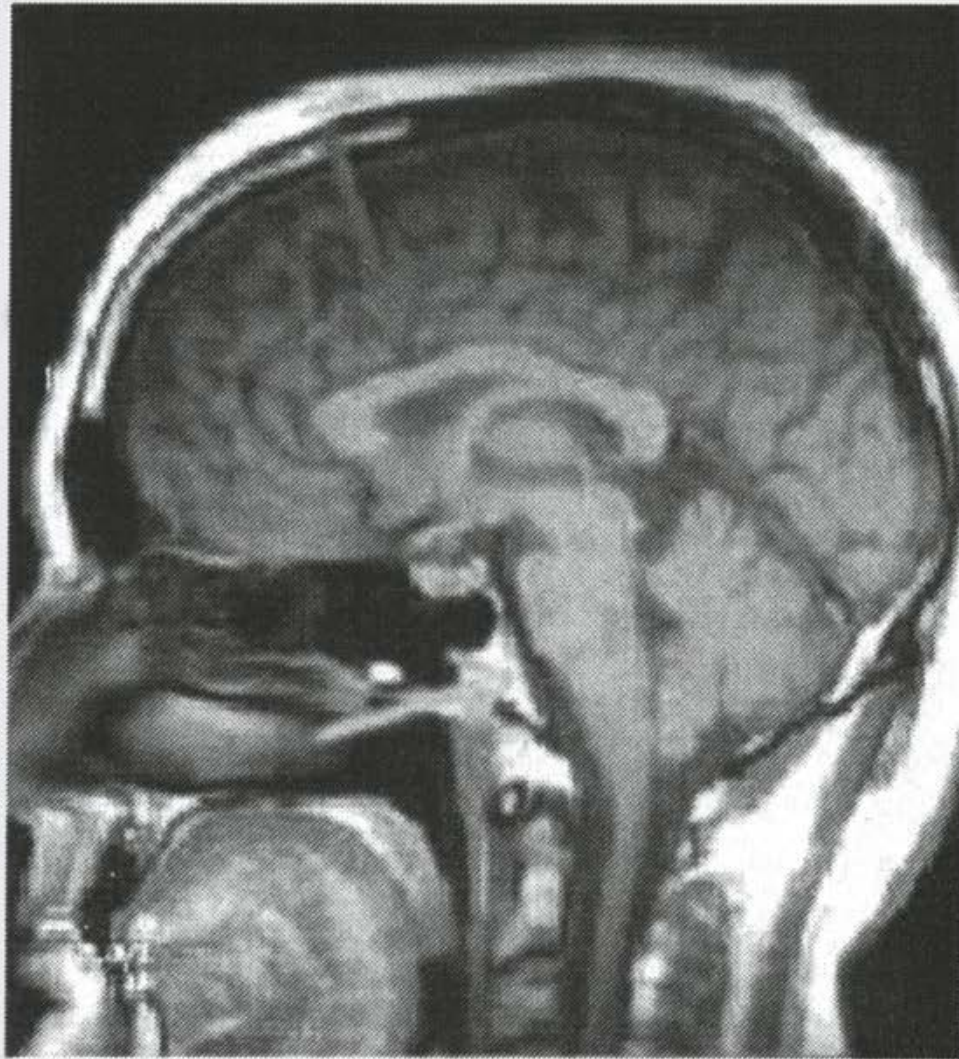
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SP 15.
SL 1.
FoV 150*20
180 *256c
Tra

W 130
C 69



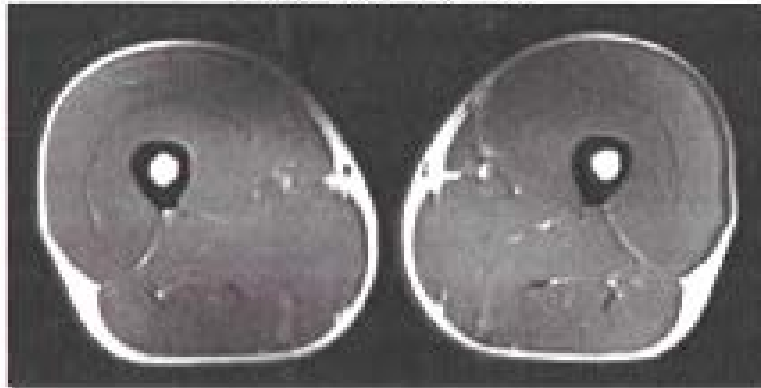




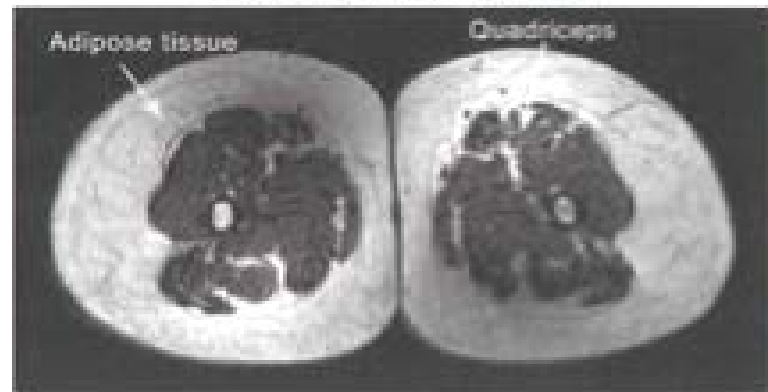
Left Image: Normal Brain **Right Image:** Atrophied Brain

Exercise Preserves Muscle Mass

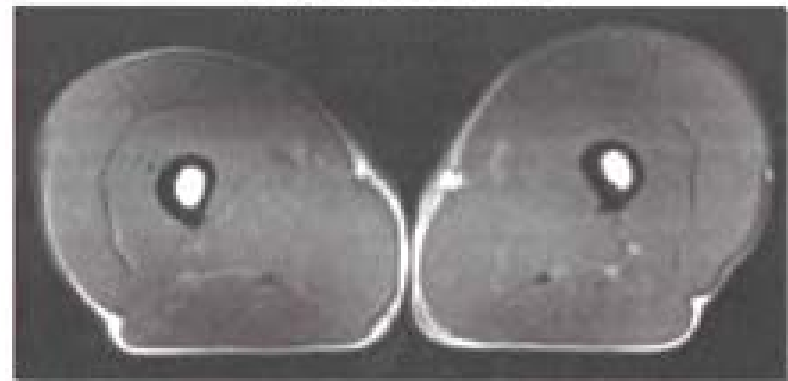
40-year-old triathlete



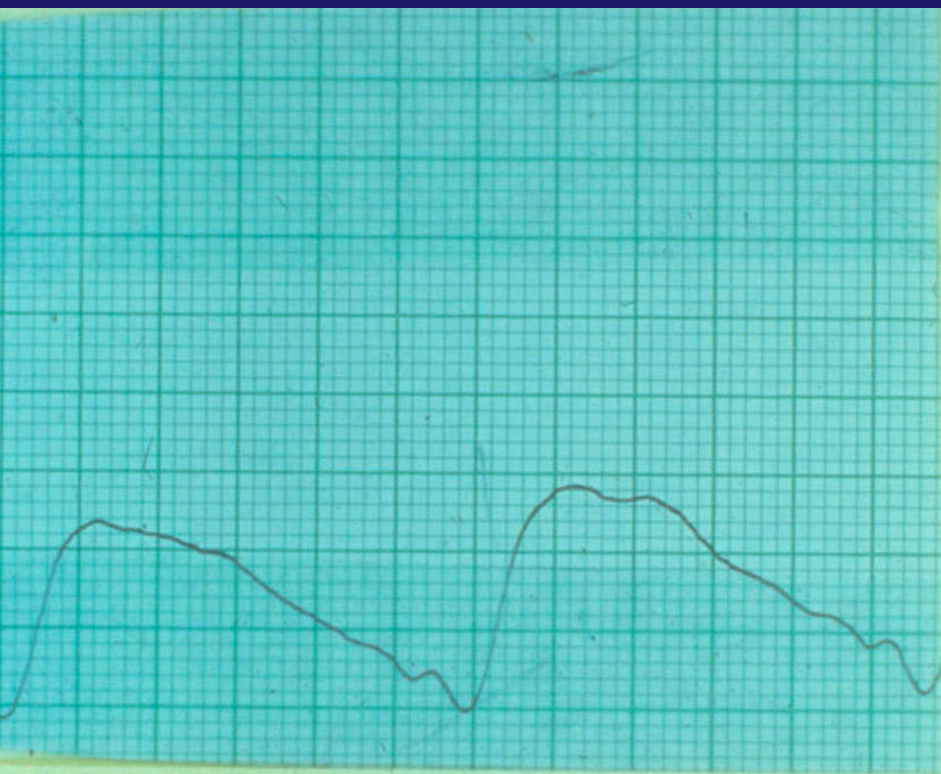
74-year-old sedentary man



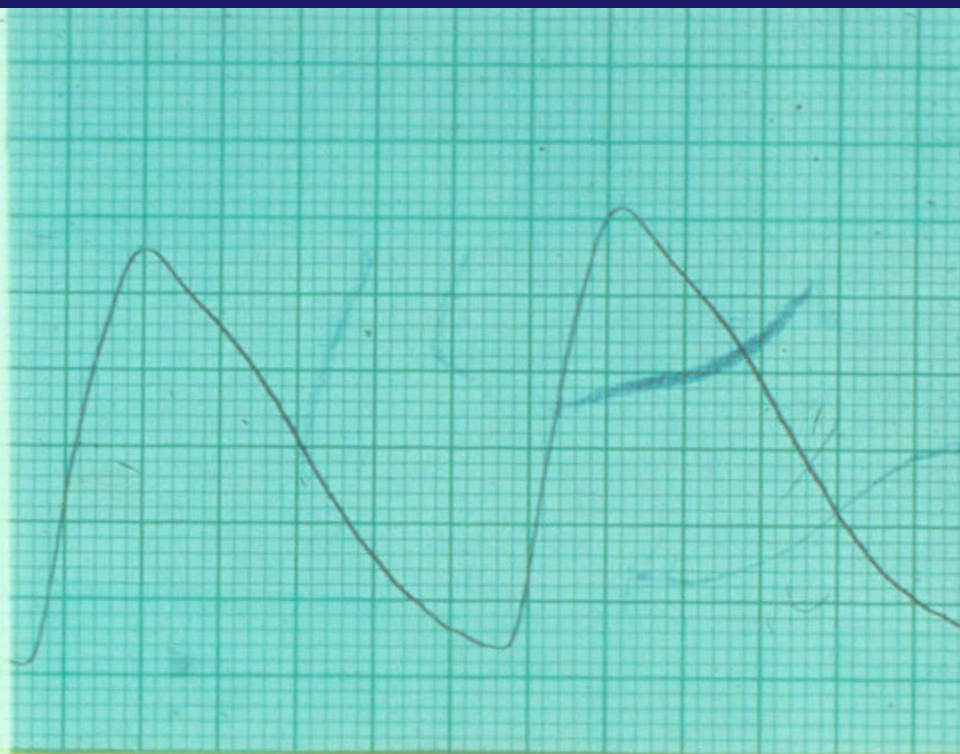
70-year-old triathlete



Wroblewski AP et al., *Phys Sportsmed*.
2011 Sep;39(3):172-8.



Pulse Volume
Rt. Ankle
3/86



Pulse Volume
Rt. Ankle
1/87



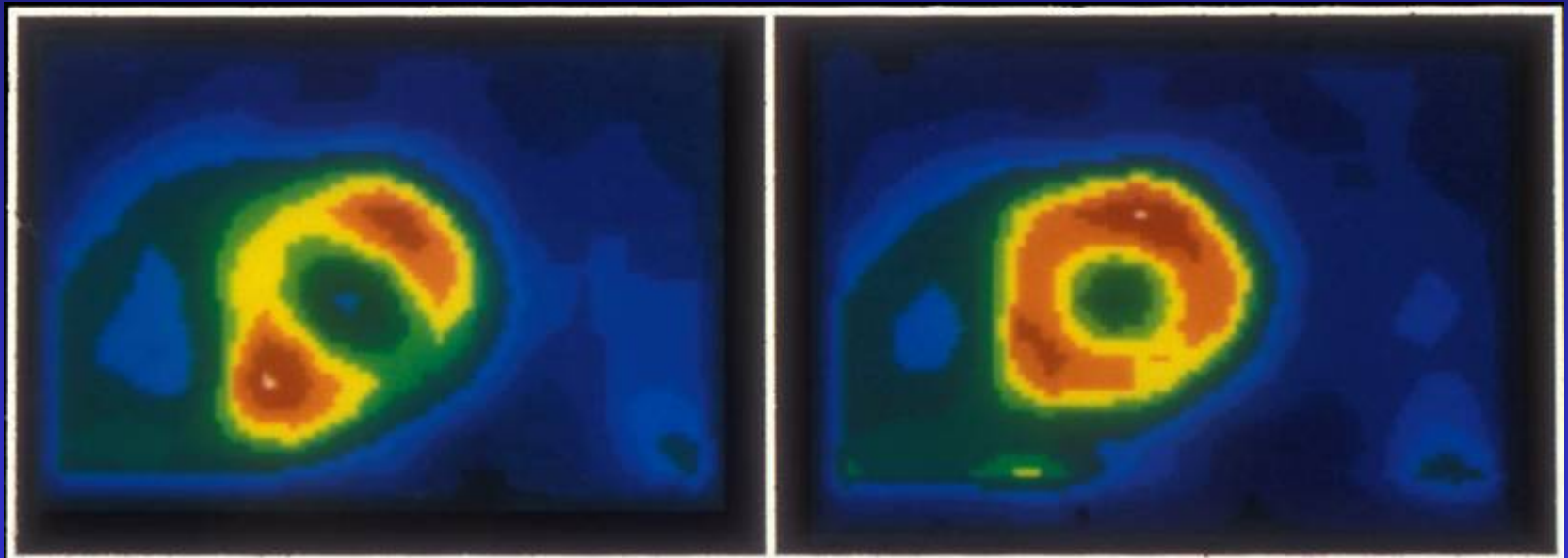


Baseline Cholesterol
10-14 days

248 mg/dl
137 mg/dl

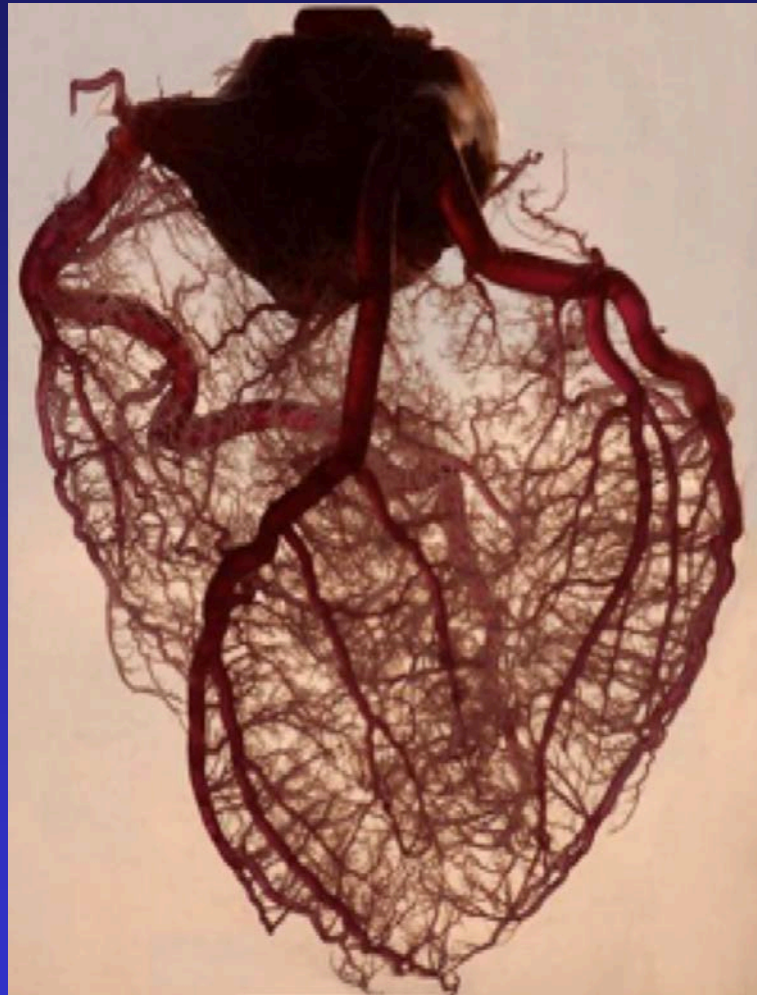
Left

Right



Before Rx

After Rx



8 Measures of Cardiovascular Disease Reversal

Coronary Angiogram

Stress Test

Pet Rubidium Dipyridamole Scan

Carotid Ultrasound

Pulse Volume

Angina

Claudication

Erectile Dysfunction









