BI 121 Lecture 9

What about MT scores?...

I. ***Announcements*** Lab notebook due today! Lab 4 HR & BP. Thursday, Lab 5 Blood Chemistry. Read 2x pp 5-1 thru 5-6. Q?

II. ***Overview of Labs*** HR & BP. ♥ Cycle. Blood chem lab review

III. ***Cardiovascular Connections*** LS 2012 ch 9

A. Normal *vs* abnormal blood flow!

B. ♥'s electrical highway + Pacemaker activity
LS fig 9-7 p 235, tab 9-1 p 236, fig 9-8 p 237

IV. ***CV Physiology in the News*** Randy Foye, NBA player with *Situs Inversus*? 1:10,000! NHLBI & AHA websites Nicole Kidman & exercise? ACSM, AHA, CDC guidelines

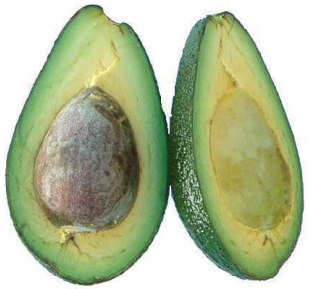
V. ***CV Pathophysiology & Risk Reduction*** LS ch 9, 10 +…

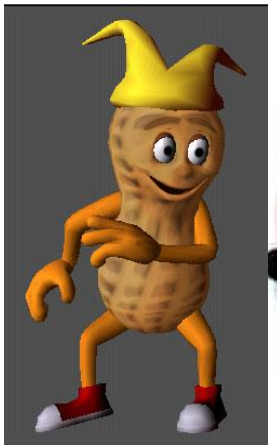
A. AMI, CVA, CVD, PVD, TIA, HTN? + surgical treatments

B. Atherosclerosis? LS fig 9-27, 9-25, 9-26 pp 266-8

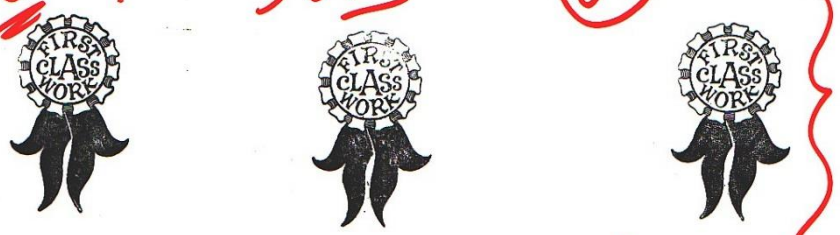
C. How to minimize risk of CVDs? Treatment triad: Exercise, Diet, Drugs + Surgery

D. Food choices make a difference? What's HAPOC?





WOW! SUPER



~ TOP 5 - 10 j.

EXCELLENT!!

~ TOP 15 j.

GREAT EFFORT

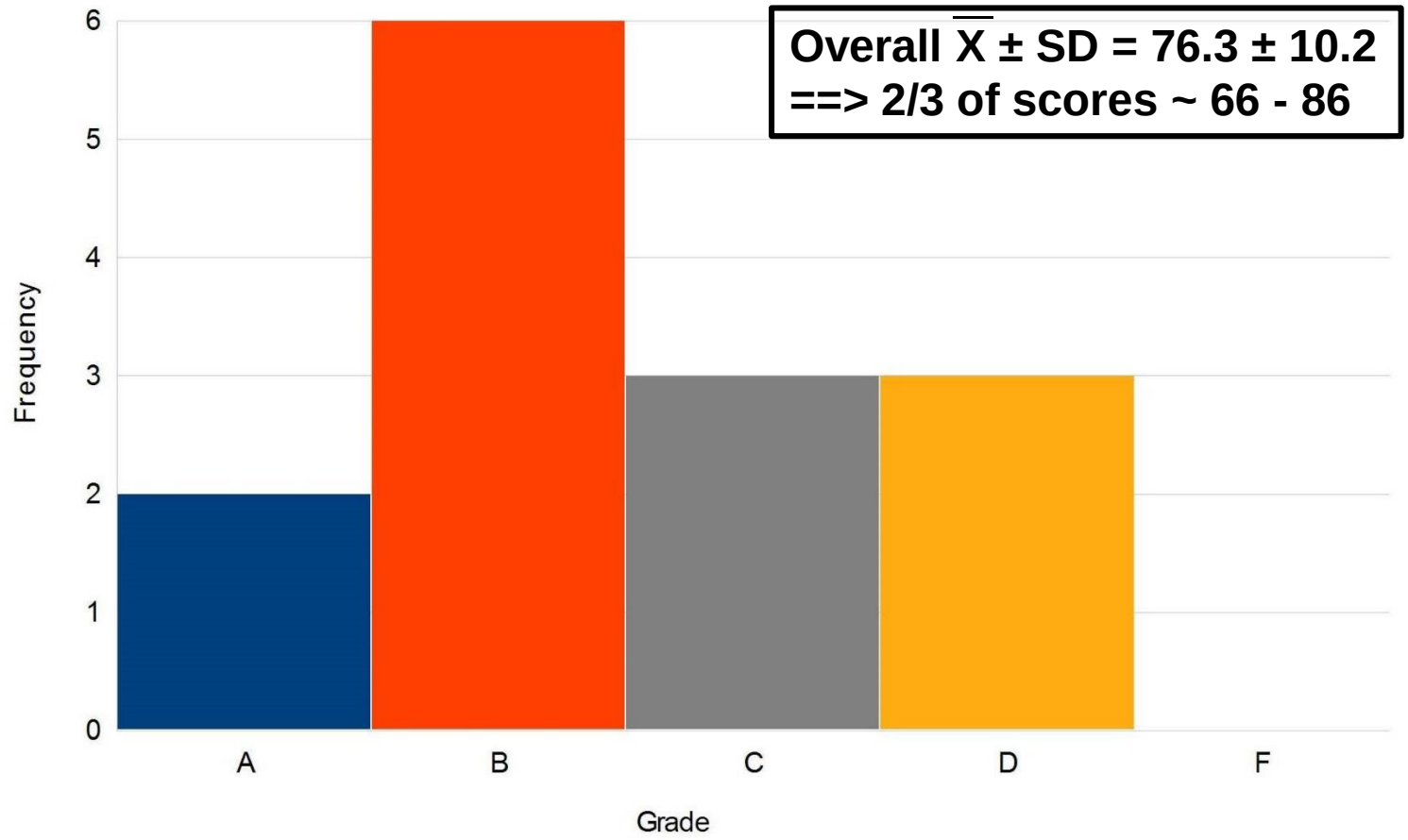
~ TOP 20 - 25 j.

Class Frequency Distribution Report

BI 121 MT U16, Part II, Multiple Choice

Overall Mean Score: 78.93%

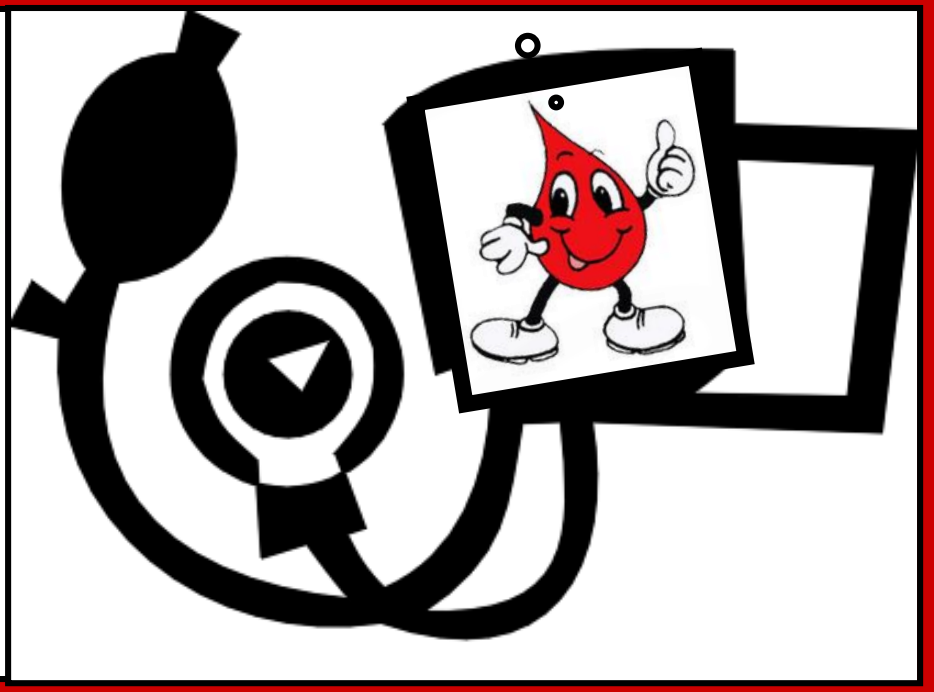
Grade	Percent Score	Raw Score	Frequency	Percent
A	90.00 - 100.00	36.00 - 40.00	2	14.29
B	80.00 - 89.99	32.00 - 35.99	6	42.86
C	70.00 - 79.99	28.00 - 31.99	3	21.43
D	60.00 - 69.99	24.00 - 27.99	3	21.43
F	0.00 - 59.99	0.00 - 23.99	0	0.00



Heart-Blood Pressure Lab Today!

Lub-dup!

I'm cool!



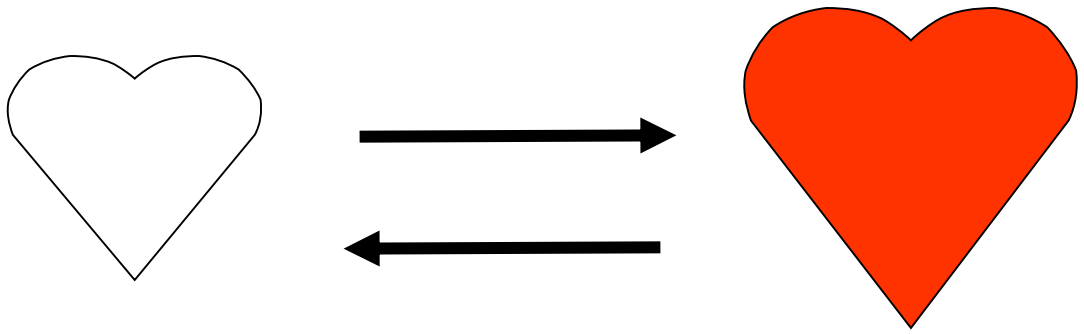
Cardiac Cycle

Systole

Contract
& Empty

Diastole

Relax
& Fill



Blood Chemistry on Thursday!
No food, drink or gum in lab!

Thanks sincerely!

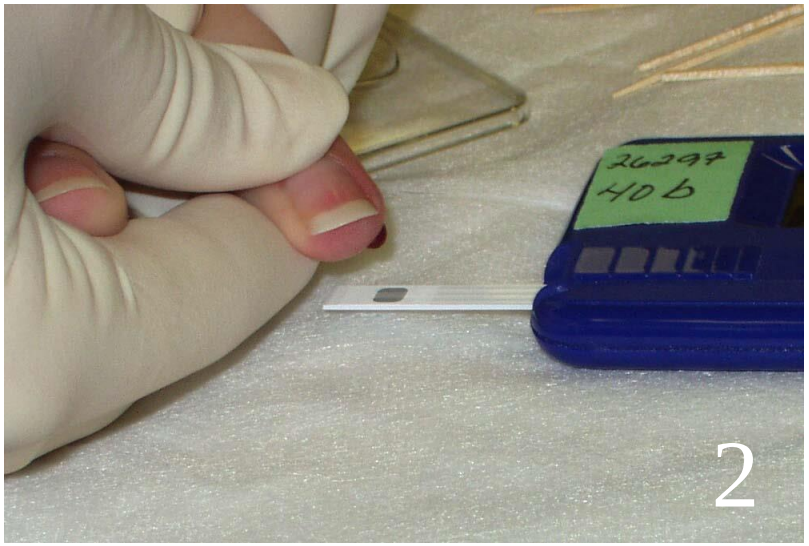
PREPARATION

WASH & DRY

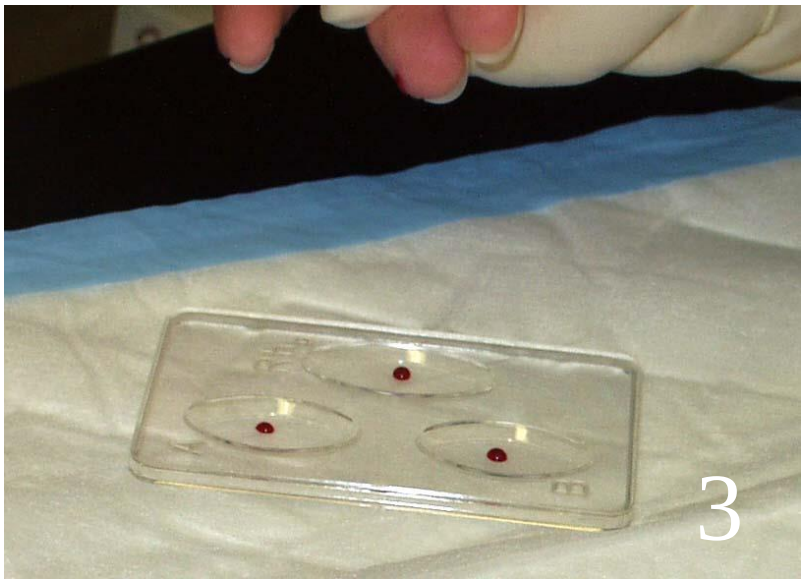
ALCOHOL

SAMPLE+TESTS

OBTAIN μSAMPLE



BLOOD GLUCOSE

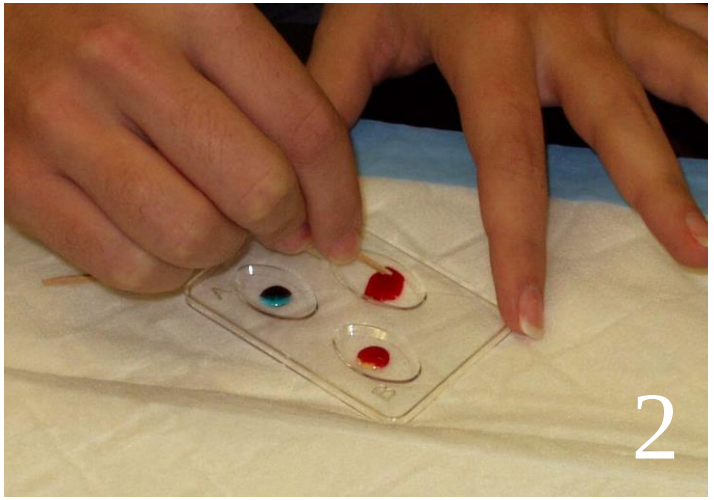


BLOOD TYPING

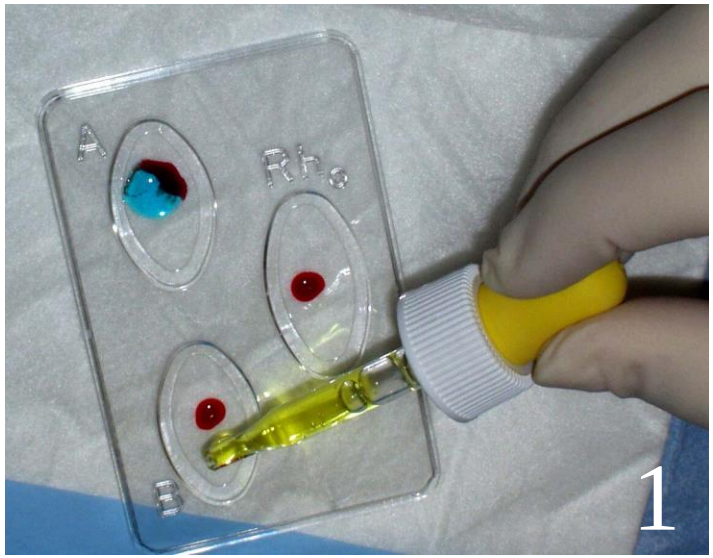
BLOOD GLUCOSE

READ & RECORD!!

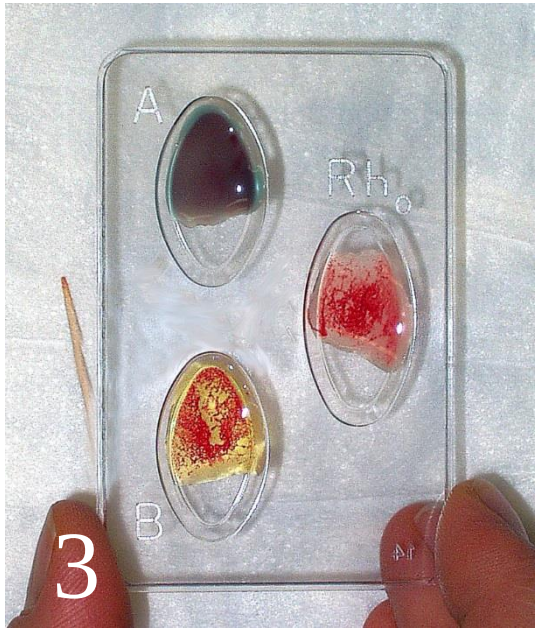
BLOOD TYPING



MIX W/TOOTHPICKS



ADD ANTISERA



READ & RECORD!!

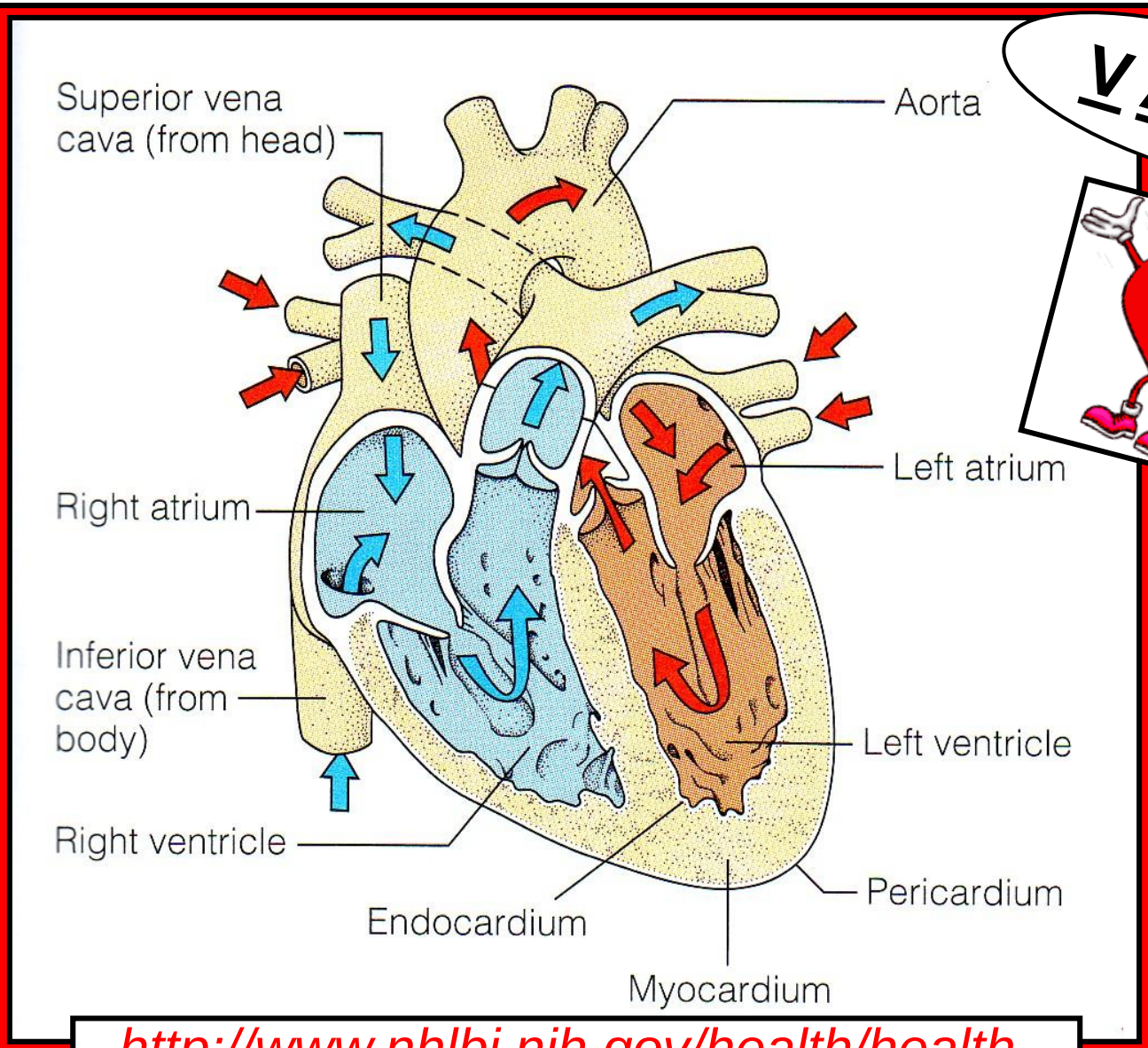
CLEAN-UP!

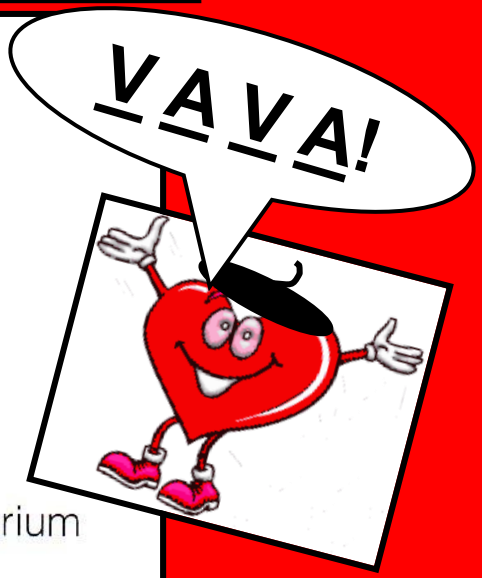
FOLD DIAPER

BLOOD PRODUCTS

REWASH!!

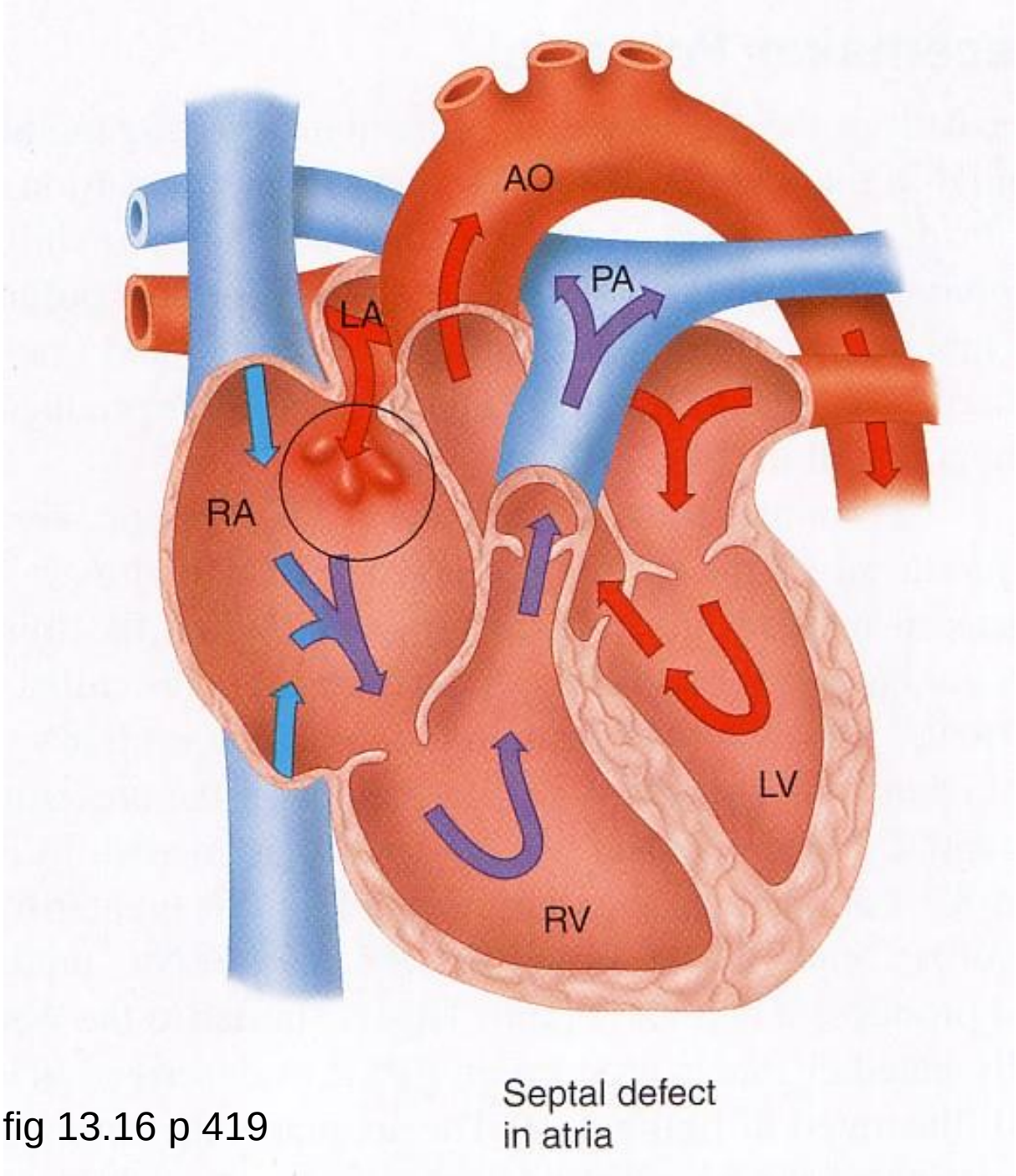
Veins → Atria → Ventricles → Arteries



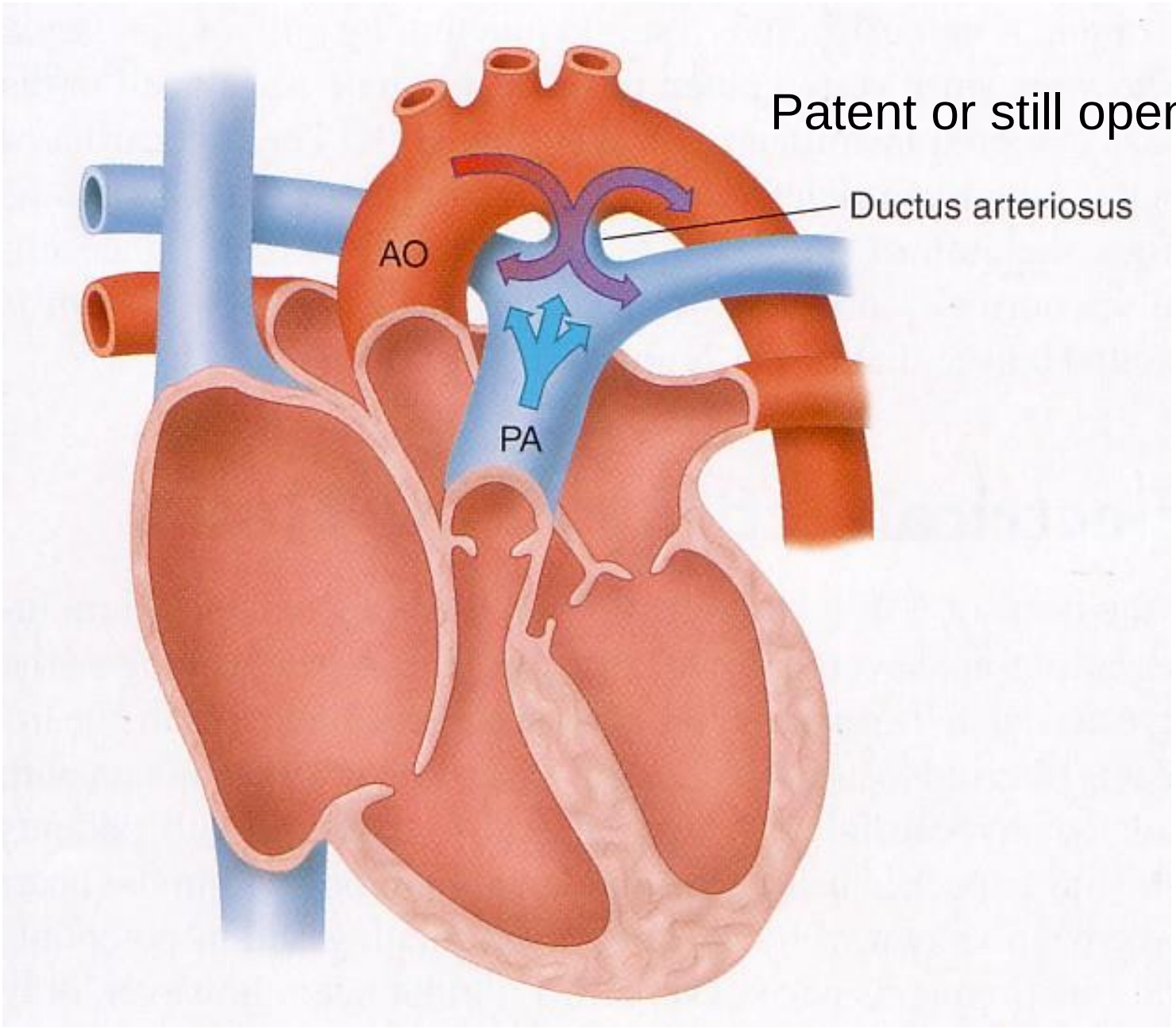


http://www.nhlbi.nih.gov/health/health-topics/topics/hhw/contraction.html

LS2007

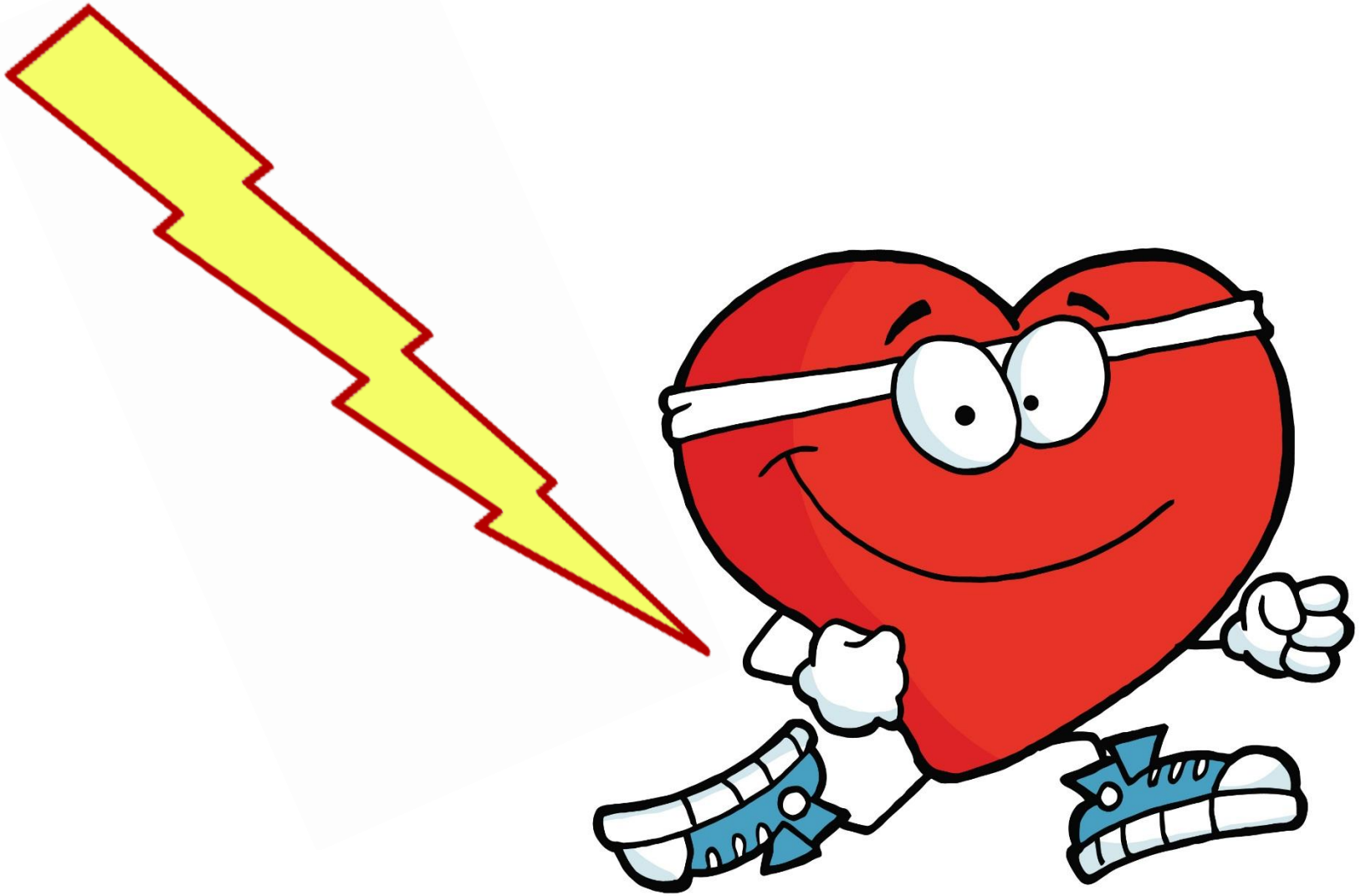


SI Fox 2009 fig 13.16 p 419

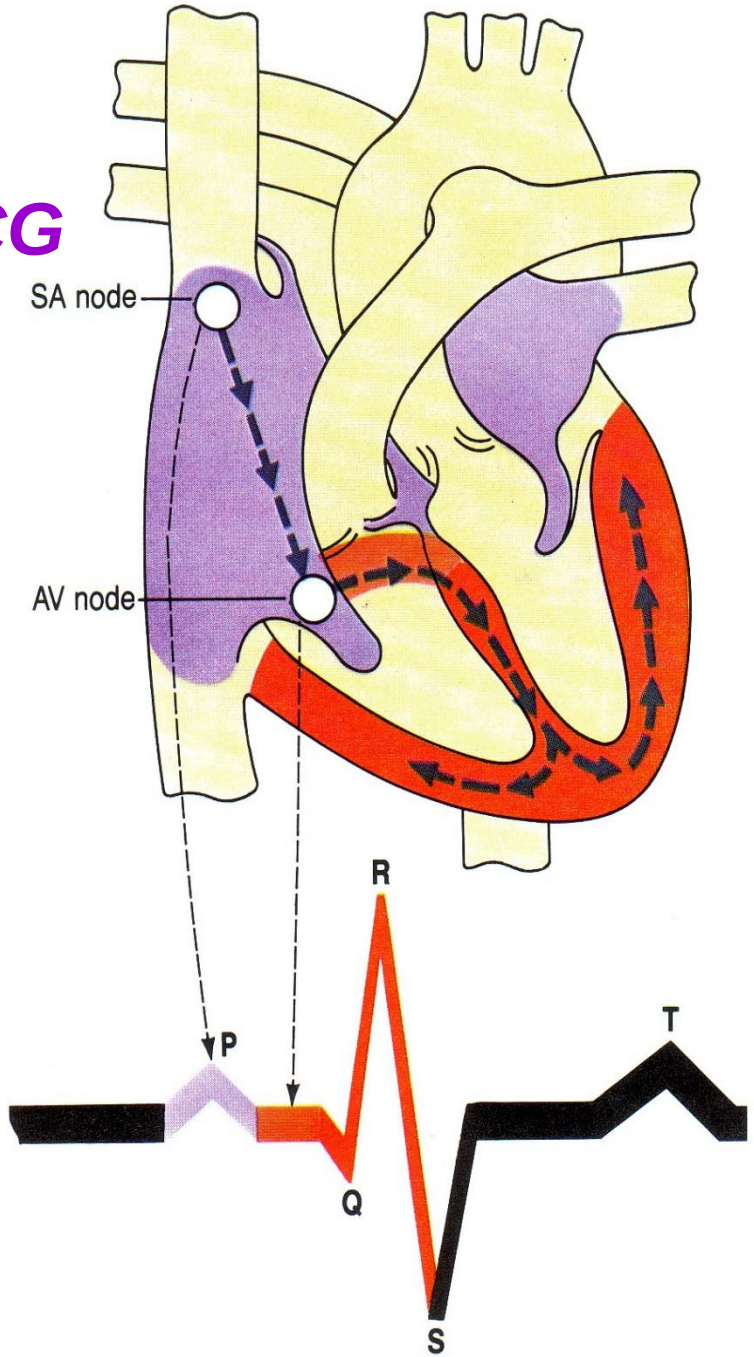


SI Fox 2009 fig 13.17 p 420

(Automatically) Shock the Heart then it Contracts!

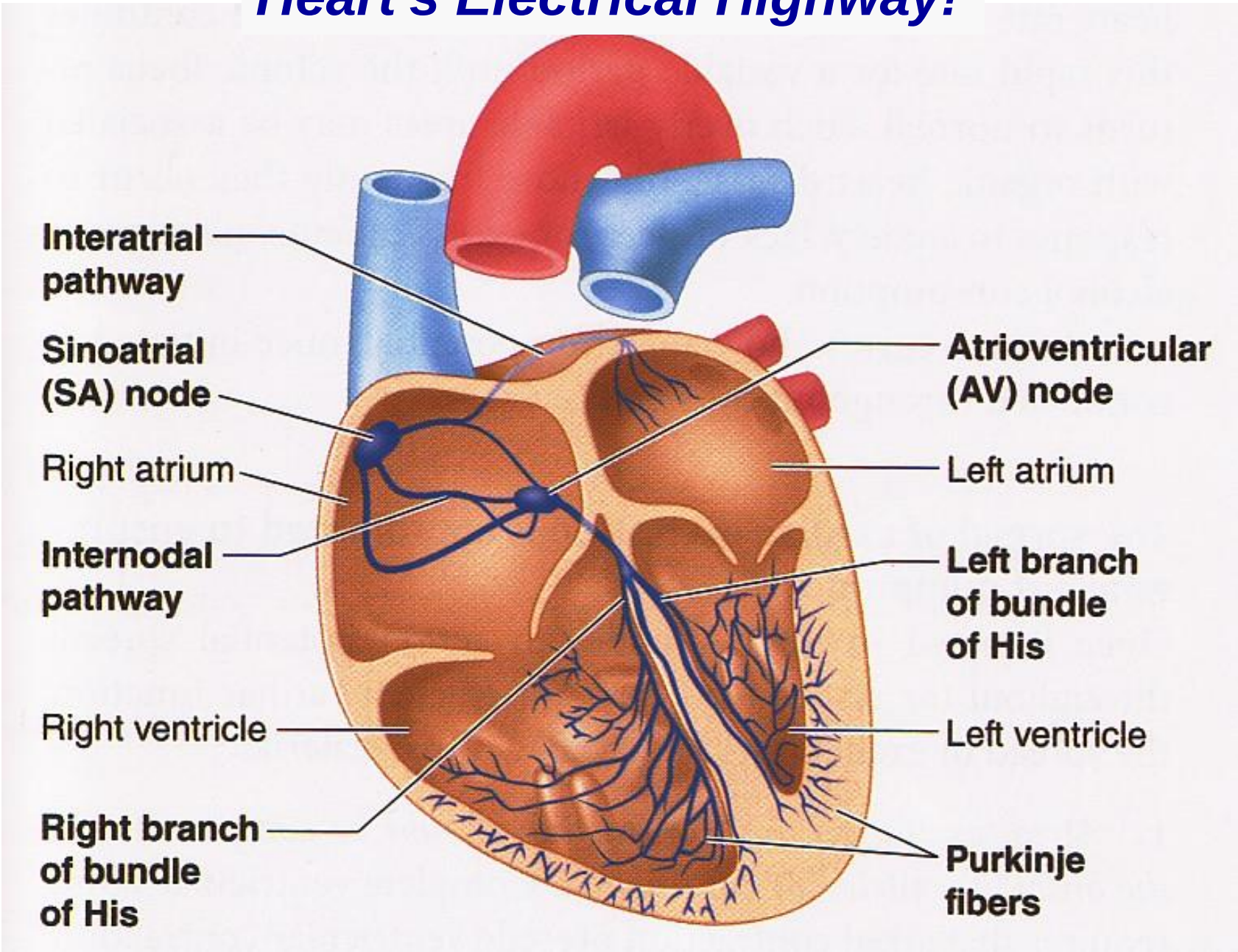


EKG/ECG Origin

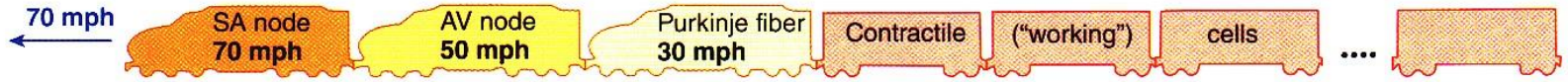


Torstar Books 1984

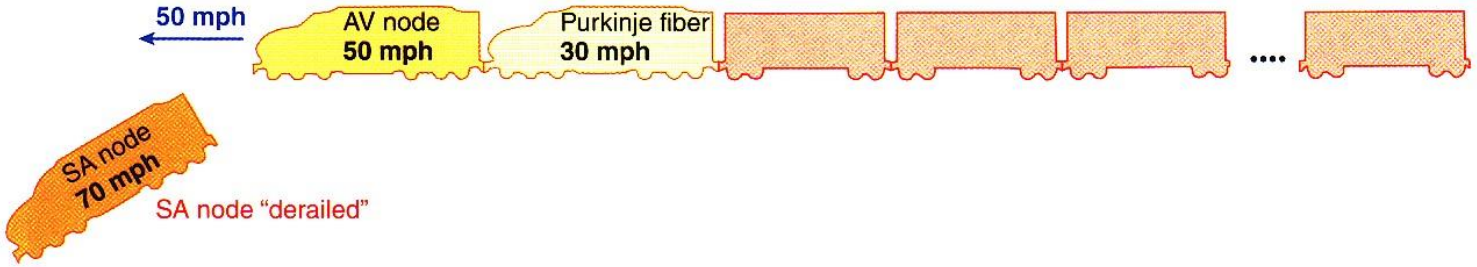
Heart's Electrical Highway!



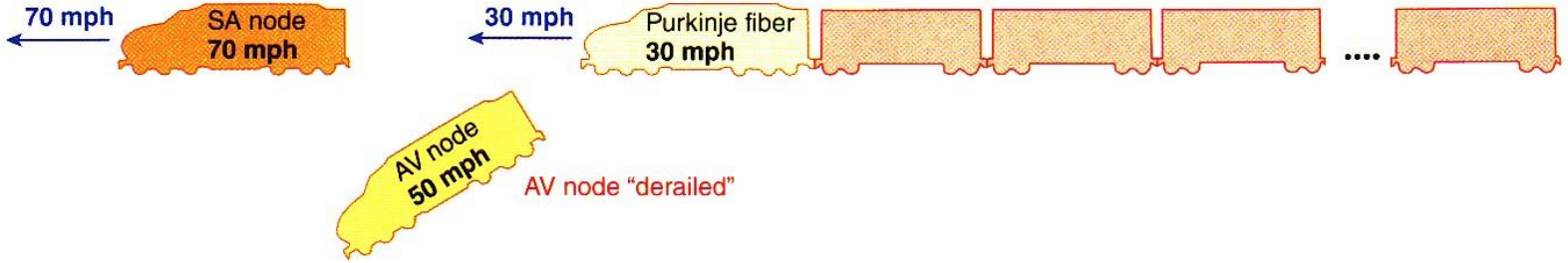
LS 2012 fig 9-7a p 235



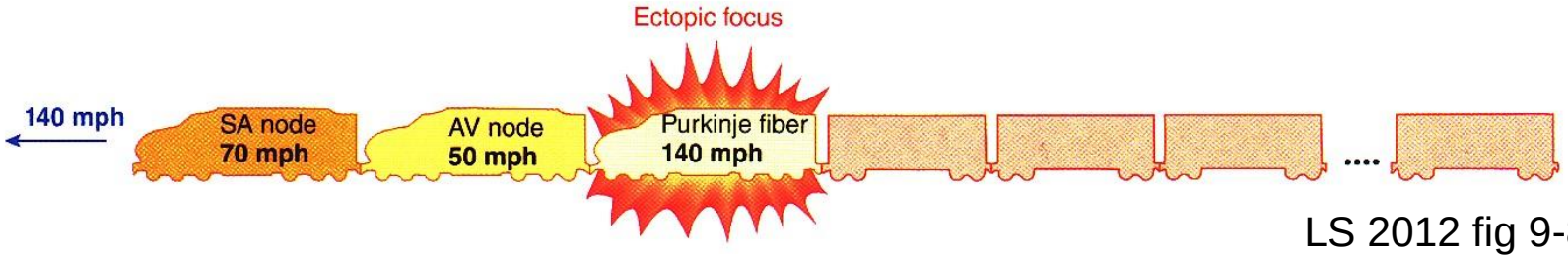
(a) Normal pacemaker activity: Whole train will go **70 mph** (heart rate set by SA node, the fastest autorhythmic tissue).



(b) Takeover of pacemaker activity by AV node when the SA node is nonfunctional: Train will go **50 mph** (the next fastest autorhythmic tissue, the AV node, will set the heart rate).

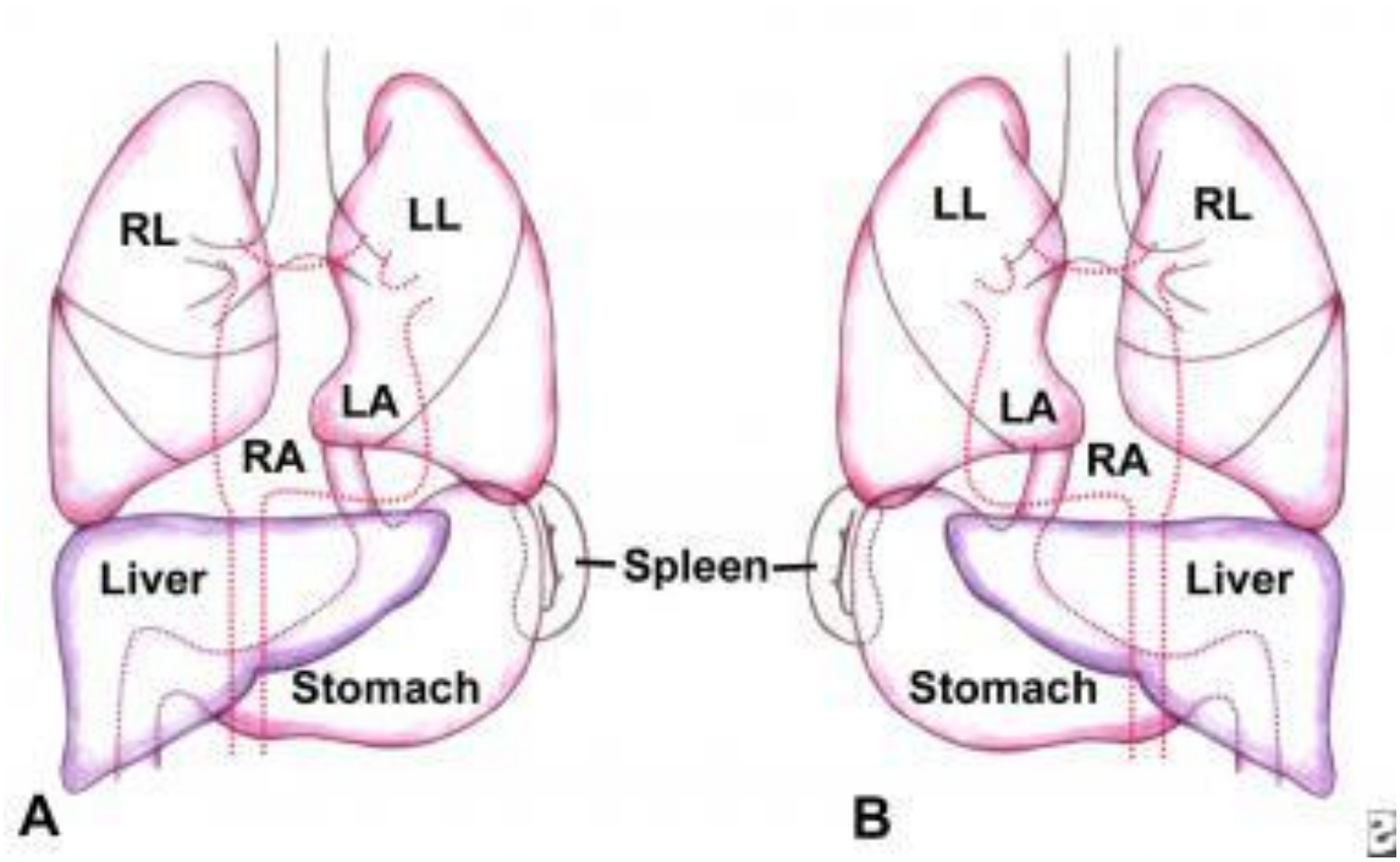


(c) Takeover of ventricular rate by the slower ventricular autorhythmic tissue in complete heart block: First part of train will go **70 mph**; last part will go **30 mph** (atria will be driven by SA node; ventricles will assume own, much slower rhythm).



LS 2012 fig 9-8 p 237

Normal (A) *vs Situs Inversus* (B): 1:10,000 live births!



SOURCE: **Medscape** http://emedicine.medscape.com/article/413679-overview

Randy Foye, NBA Player & Situs Inversus!

http://www.pbs.org/program/nine-months-that-made-you/

American Heart Association (AHA) & National Heart, Lung & Blood Institute

http://www.my.americanheart.org

American Heart Association®
Learn and Live℠

http://www.nhlbi.nih.gov/

Department of Health and Human Services · National Institutes of Health

National **Heart Lung and Blood** Institute

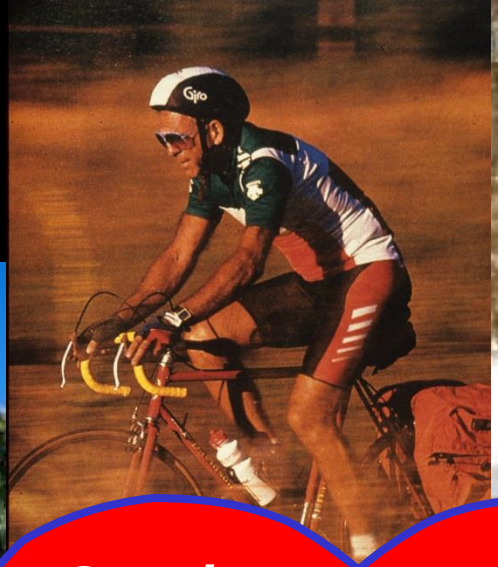
People Science Health

We all have multimillion-dollar bodies!!

Can you believe that's Nicole?

Hollywood glamour queen Nicole Kidman likes to swim to keep that multimillion-dollar body in shape. But the down-to-earth superstar doesn't need a fancy spa — she does her laps at the local YMCA! Nice goggles, Nic!

How much aerobic?



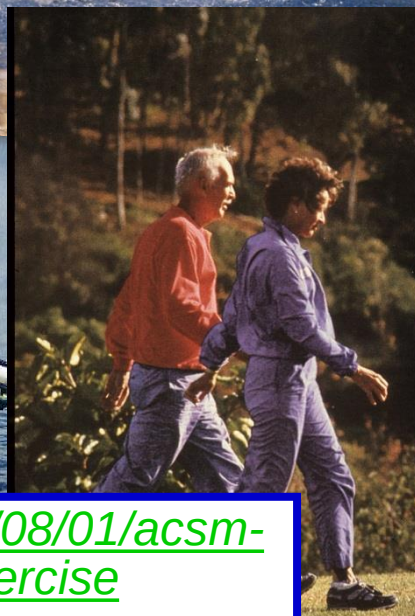
Continuous exercise

≥ 50% muscle mass

≥ Conversational pace

20-60 min/session

3-5 days/wk



http://www.acsm.org/about-acsm/media-room/news-releases/2011/08/01/acsm-issues-new-recommendations-on-quantity-and-quality-of-exercise

AMERICAN COLLEGE of SPORTS MEDICINE

Guidelines: Healthy Adults < 65 yr

American Heart Association®
Learn and Live℠

Do moderately intense aerobic exercise
30 min/d, 5 d/wk

OR

Do vigorously intense aerobic exercise
20 min/d, 3 d/wk

AND

Do 8-10 strength-training exercises
8-12 repetitions/each exercise, 2 d/wk

How much strength?

- ✓2-3 days/wk
- ✓8-10 exercises for major muscle groups
- ✓≥ 1 set/exercise
- ✓8-12 (most) or 10-15 (frail/> 50-60 yr) repetitions/set

Federal exercise guidelines include strength training for all
http://www.health.gov/paguidelines/guidelines/default.aspx

Questions + Discussion

CVDs

AMI

CVA

TIA

HTN

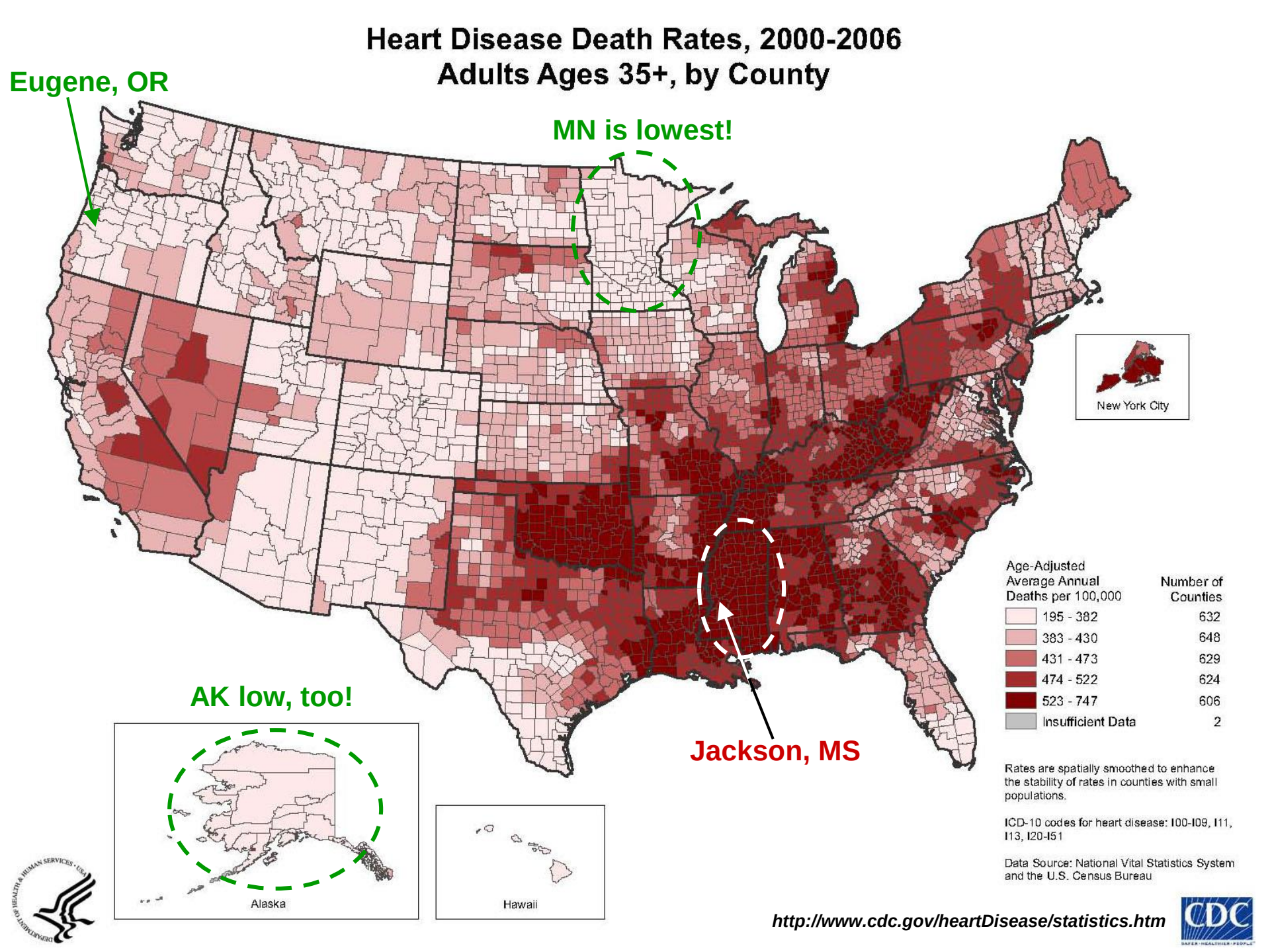
PVD

Did you know?

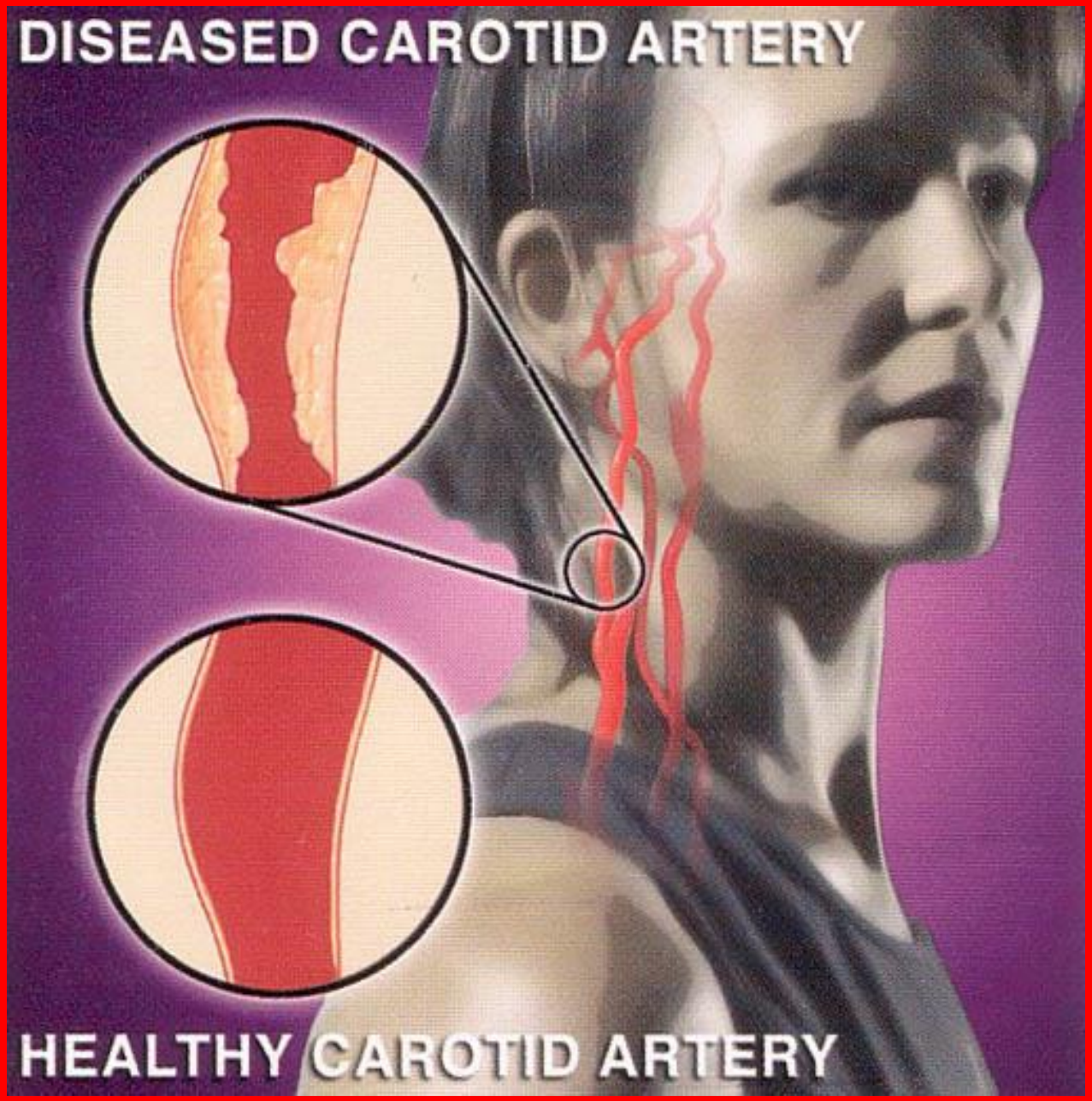
- **Every year ~785,000 Americans have a first heart attack. Another 470,000 who've had ≥ 1 have another attack.**
- **In 2008, > 616,000 people died of heart disease. Heart disease caused almost 25% of deaths in the US.**
- **In 2010, coronary heart disease US costs ~$108.9 billion including health care, medications & lost productivity.**

SOURCE: Heart Disease Facts, Centers for Disease Control, 2012

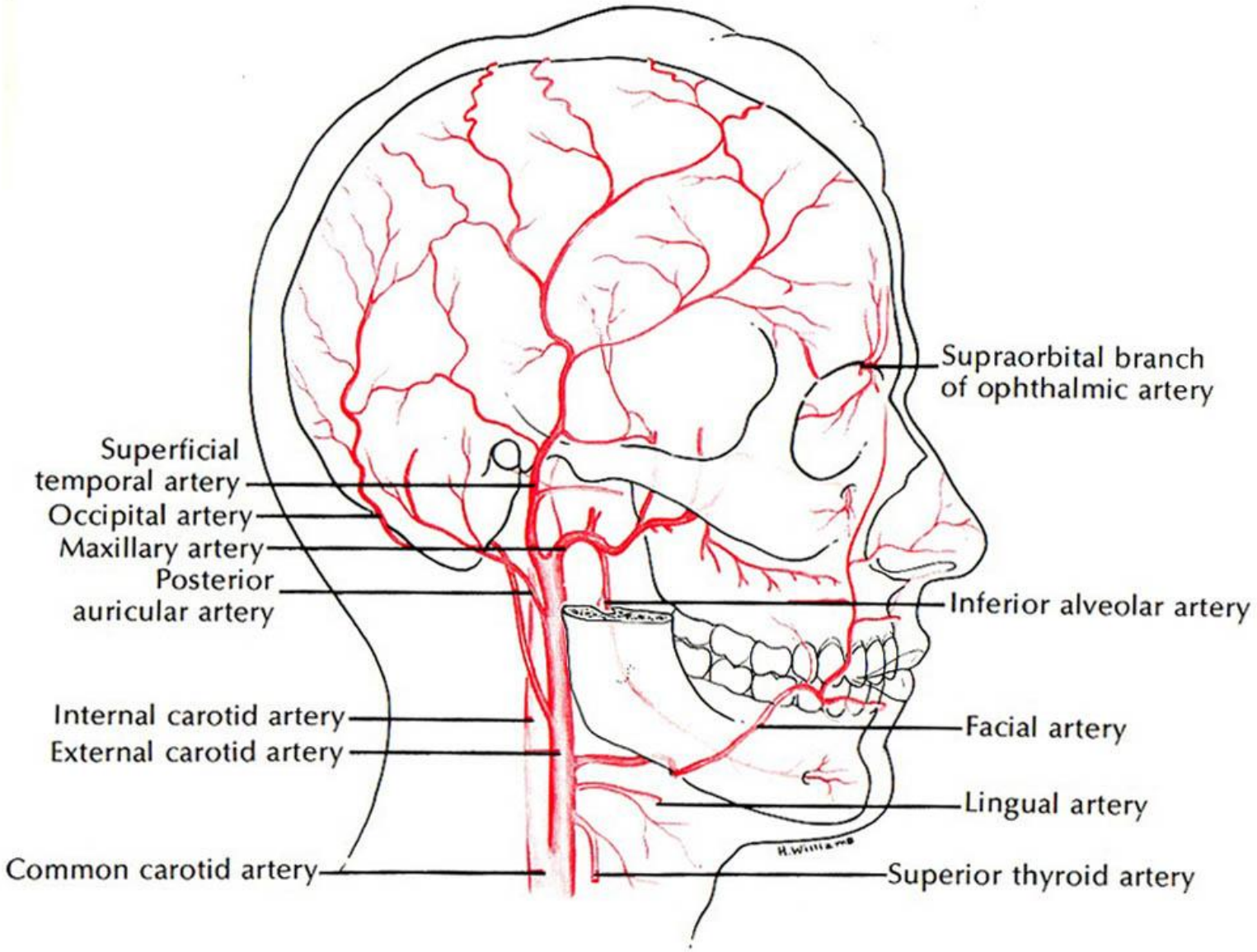
Heart Disease Death Rates, 2000-2006
Adults Ages 35+, by County



http://www.cdc.gov/heartDisease/statistics.htm

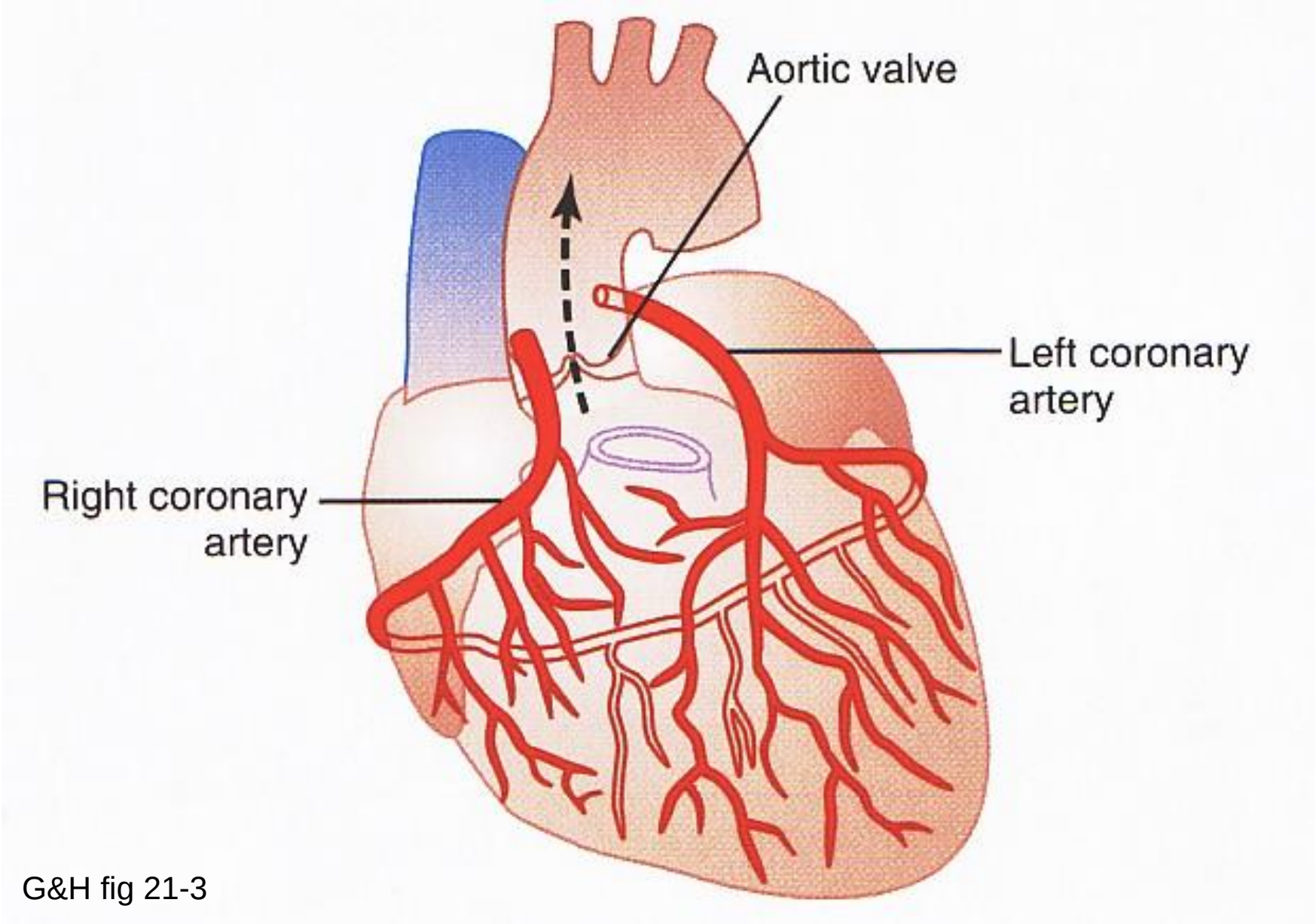


Source: Lifeline Screening, 2007

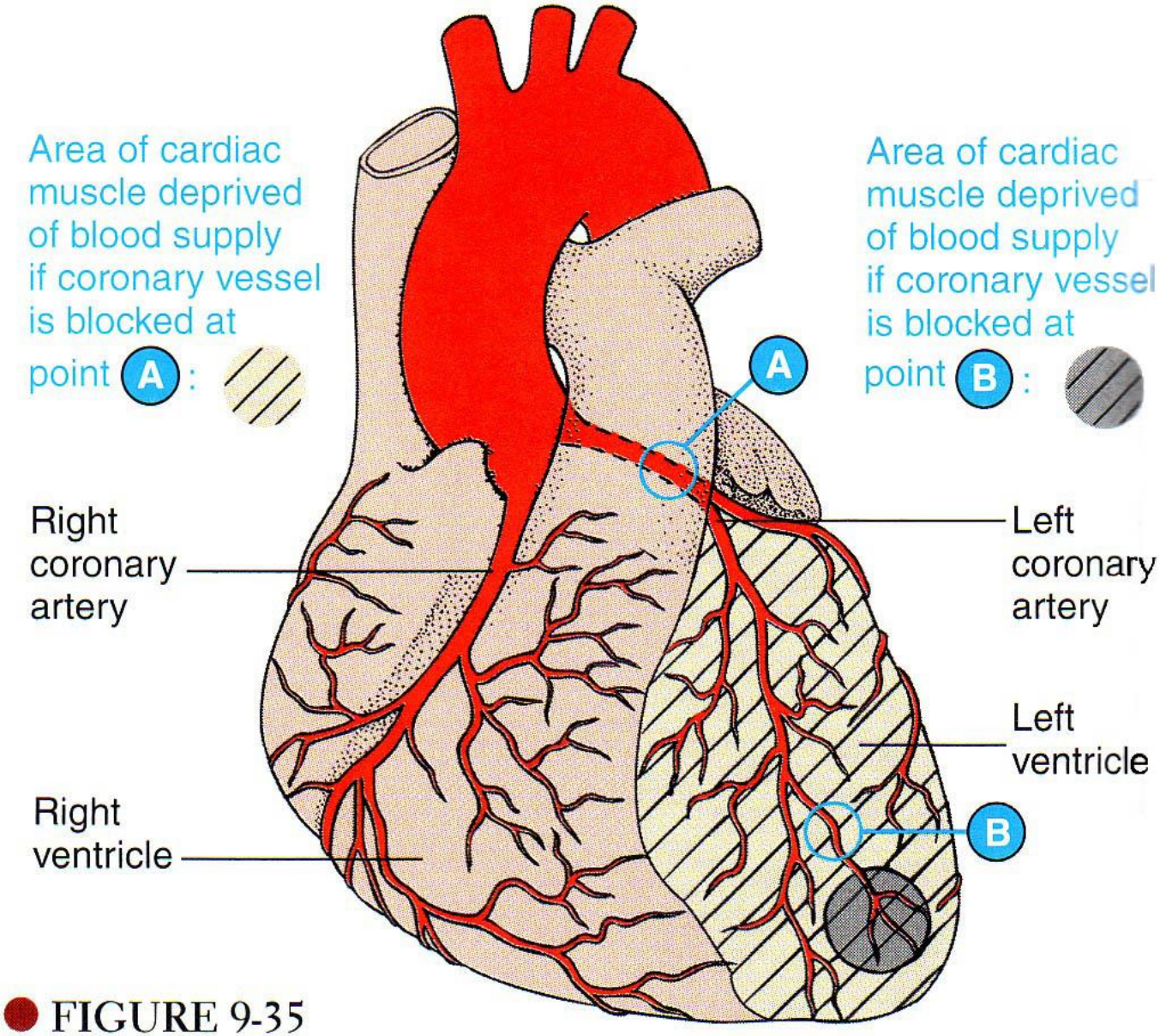


Source: Francis & Martin, 1975, p 291.

Coronary Circulation ≡ Crowns the Heart!



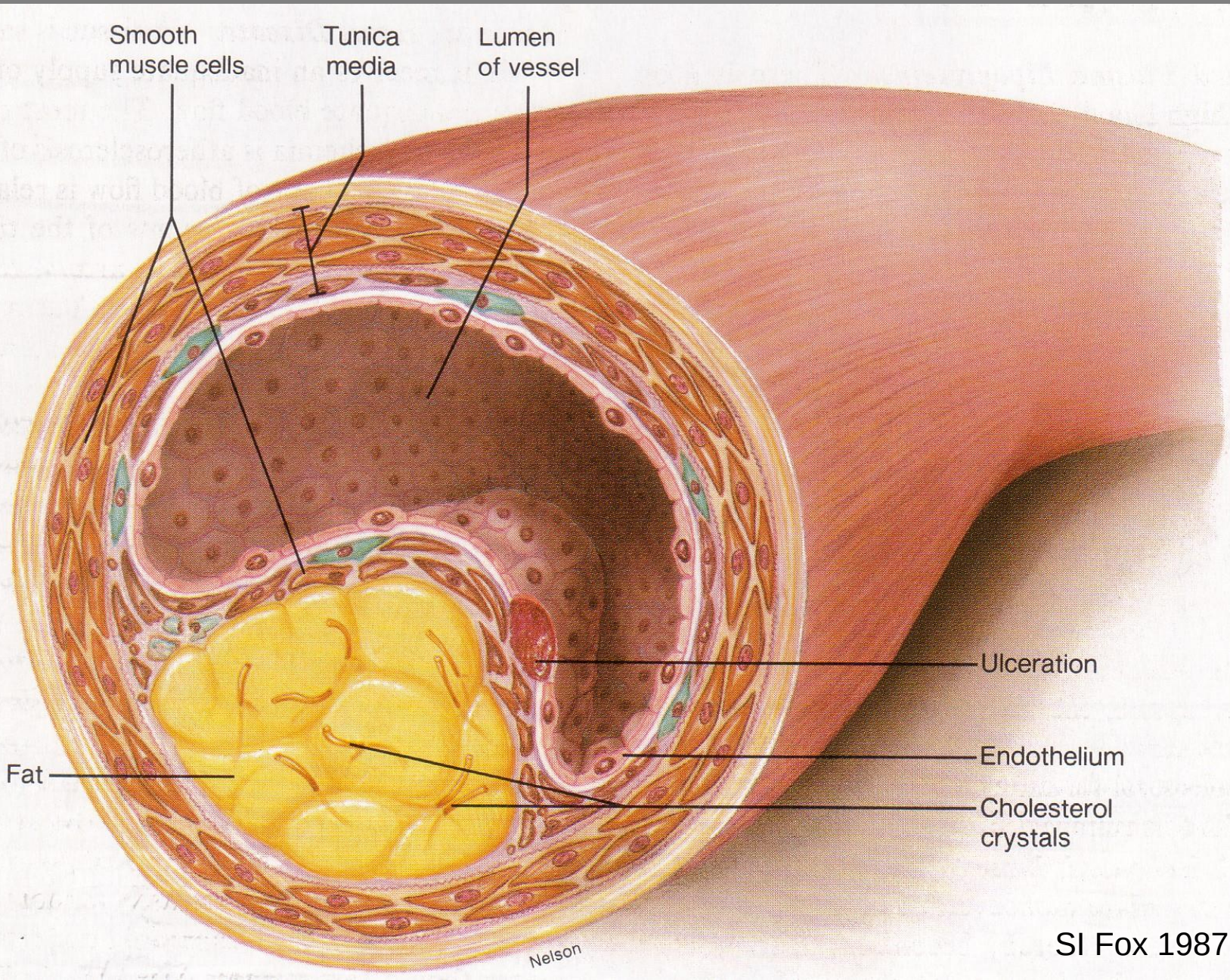
G&H fig 21-3



● FIGURE 9-35

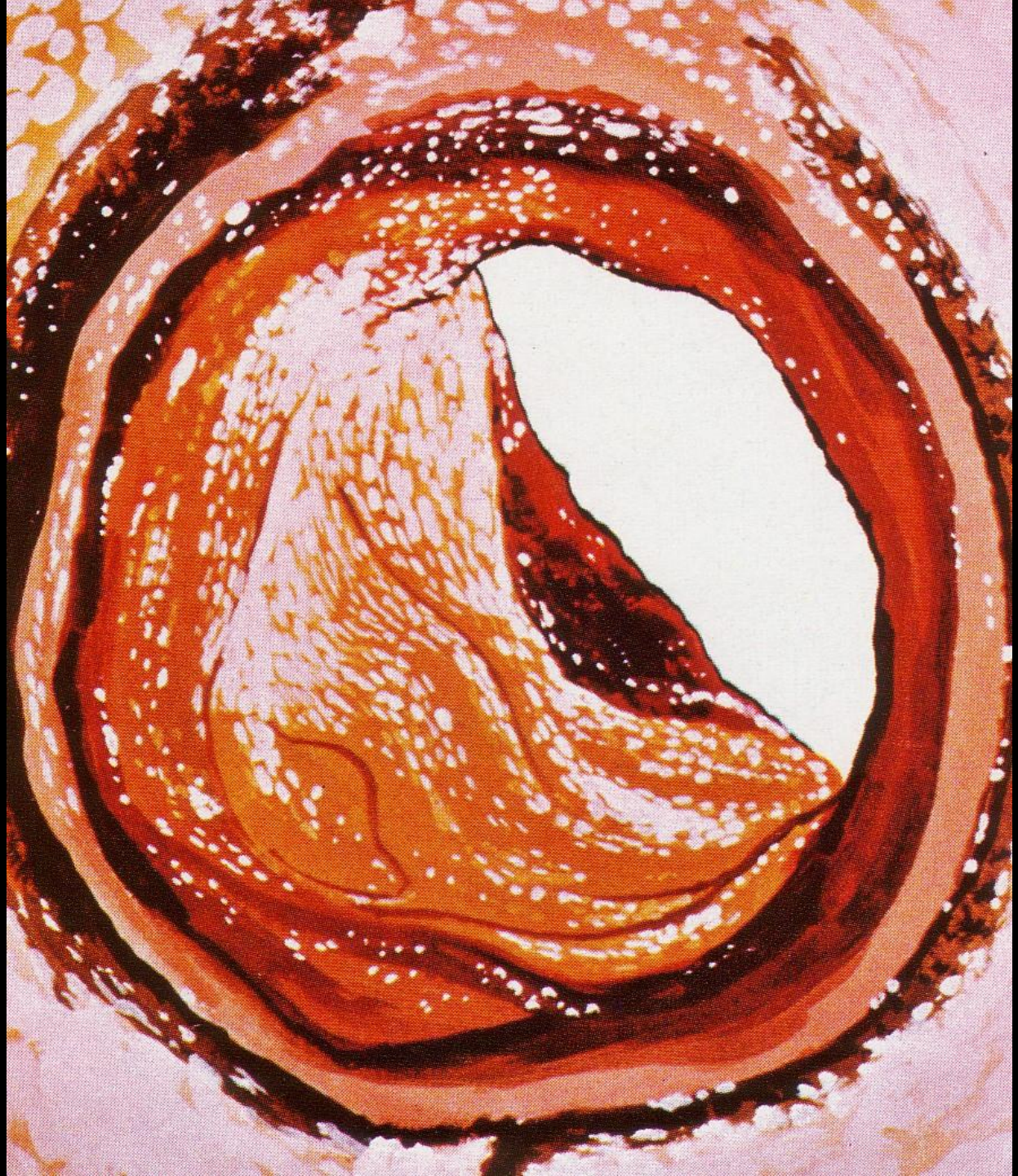
Extent of myocardial damage as a function of the size of the occluded vessel

L Sherwood 2004 p 336

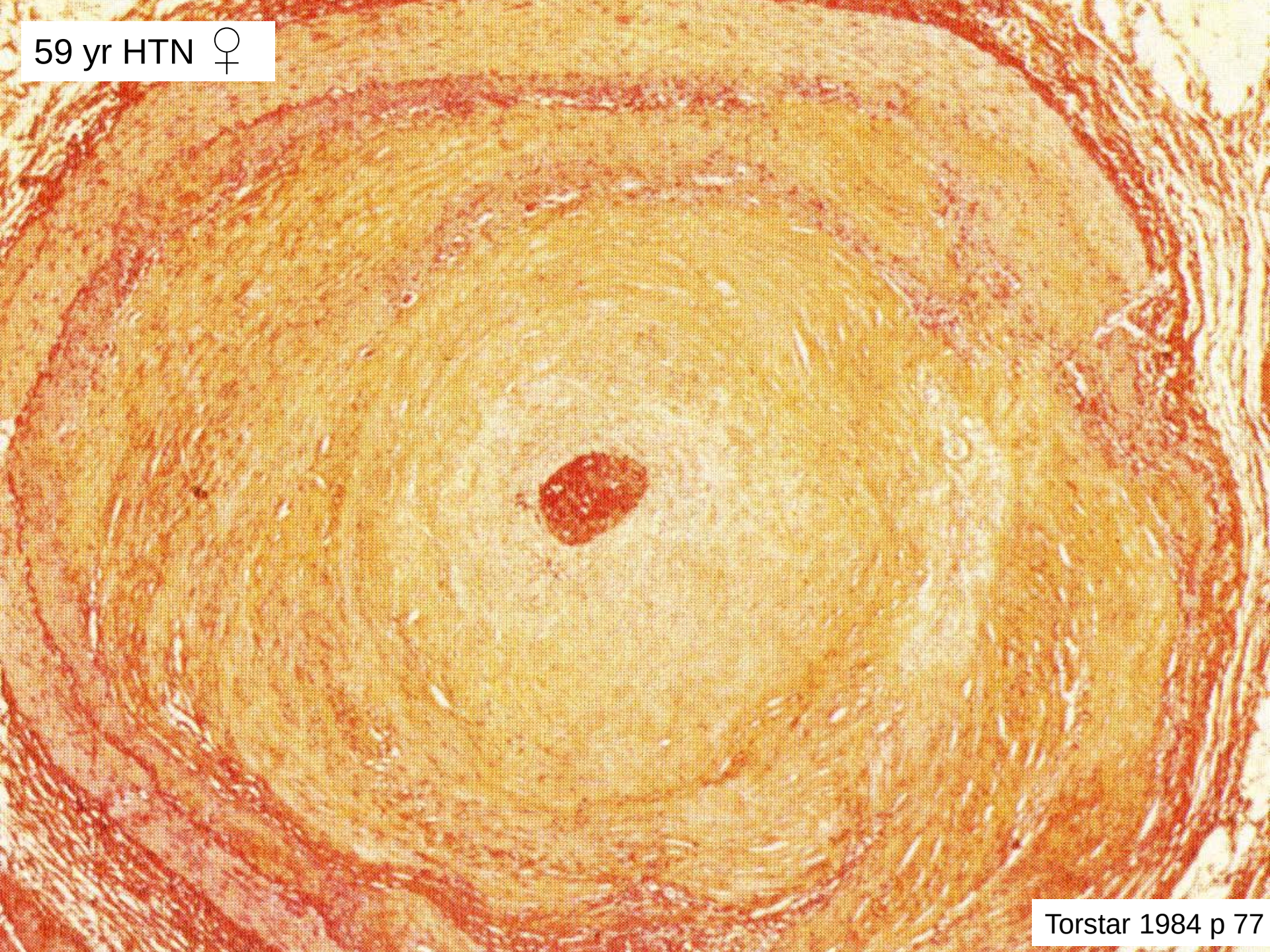


SI Fox 1987 p 370

Torstar 1984 p 76



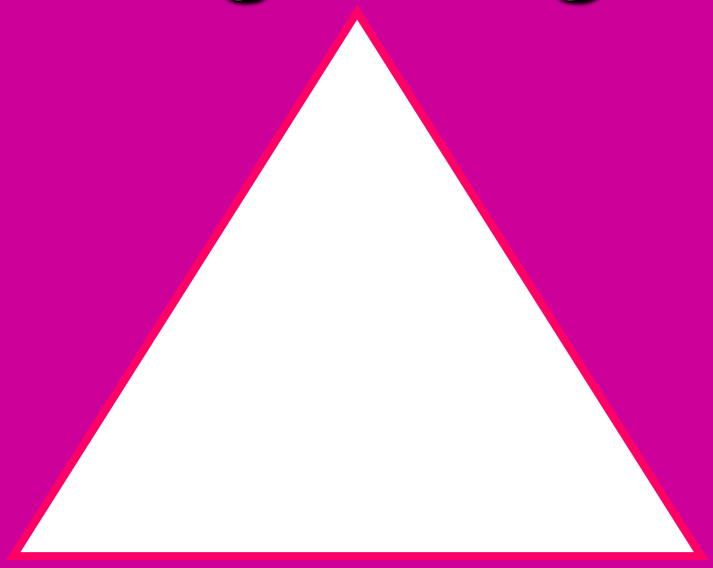
Torstar 1984 p 77


59 yr HTN ♀
Torstar 1984 p 77

Treatment Triad

***NB*: Last blasted resort!!**

Drugs/Surgery



Exercise

Dietary Modification

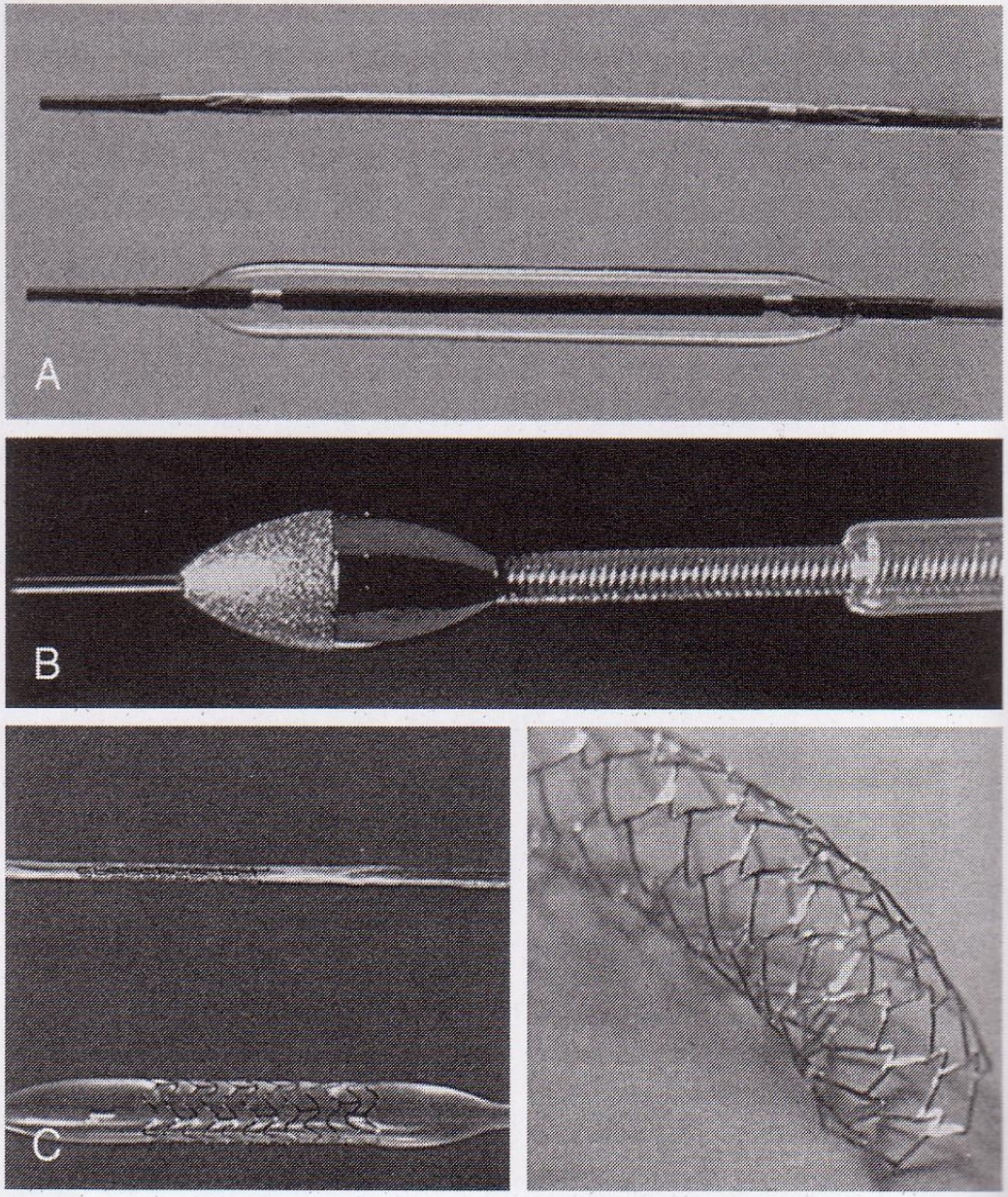
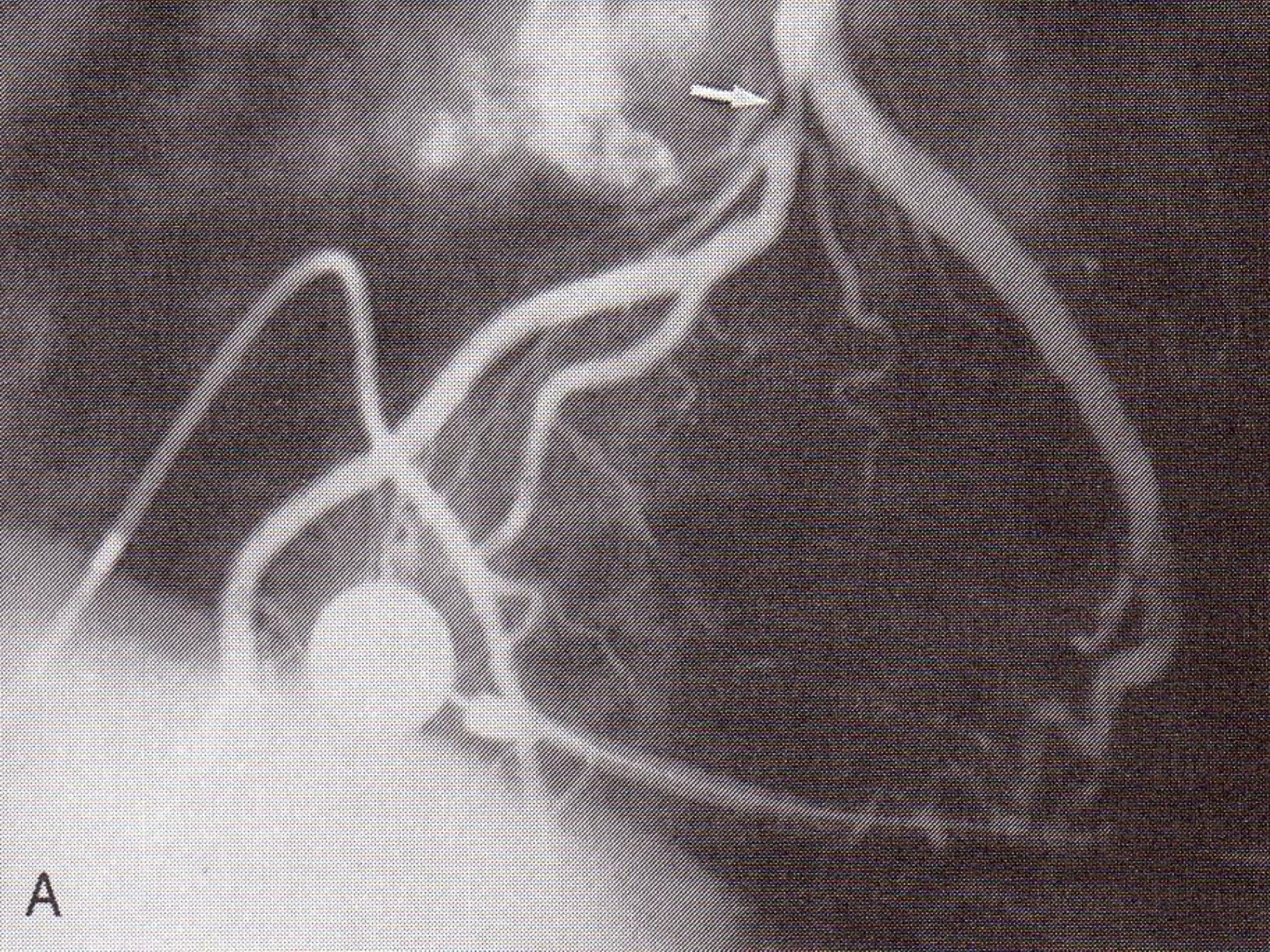
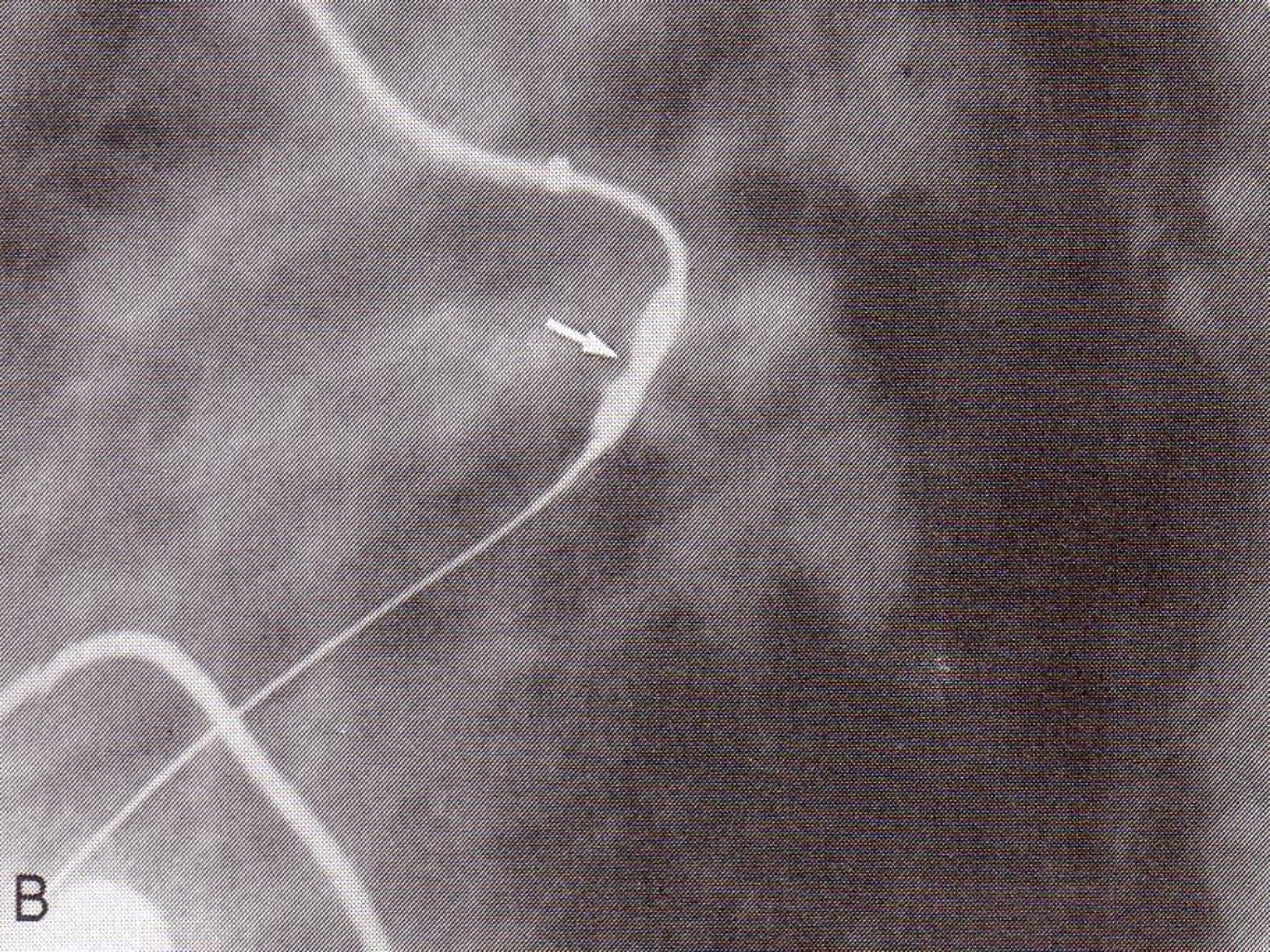
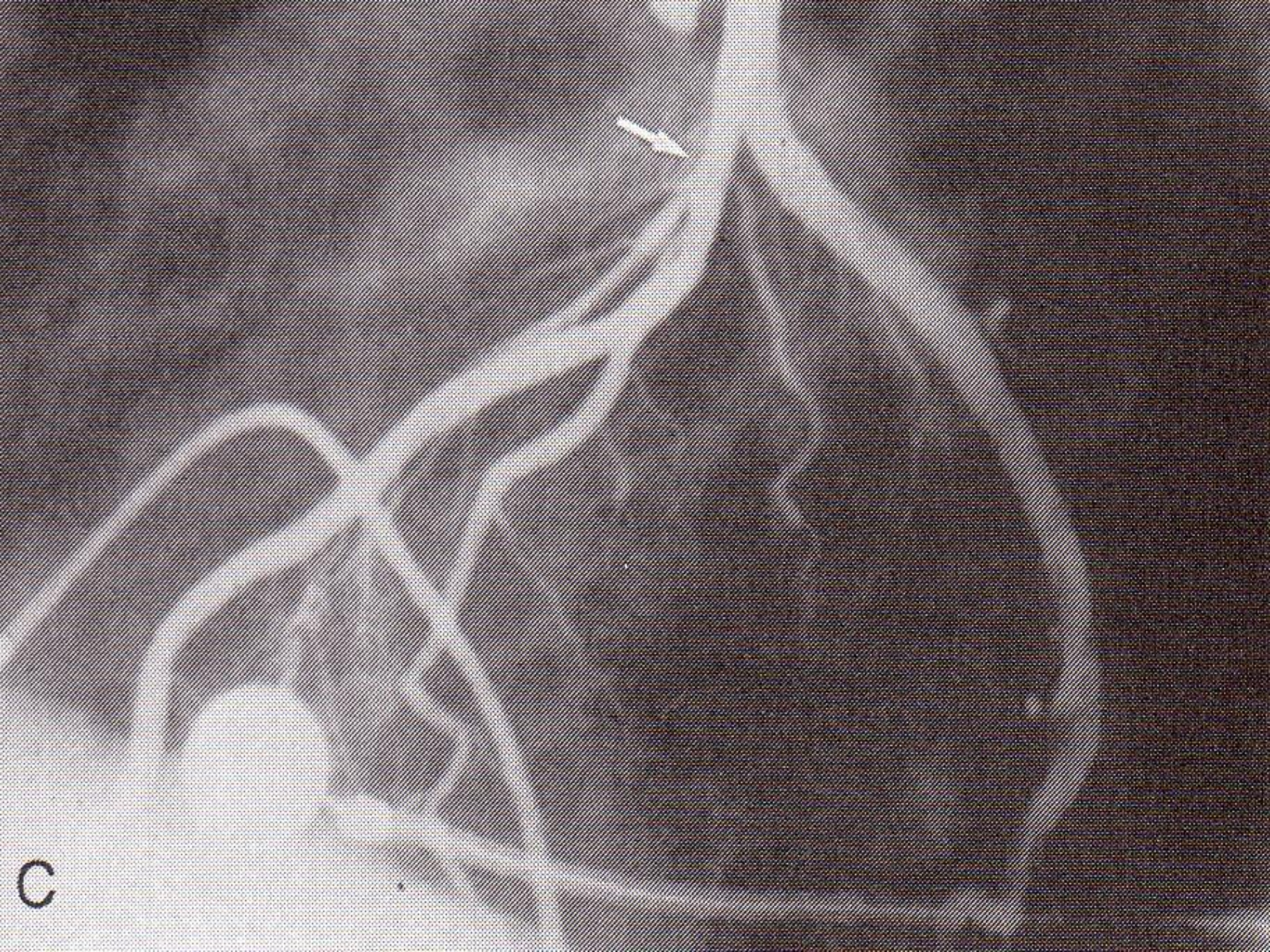
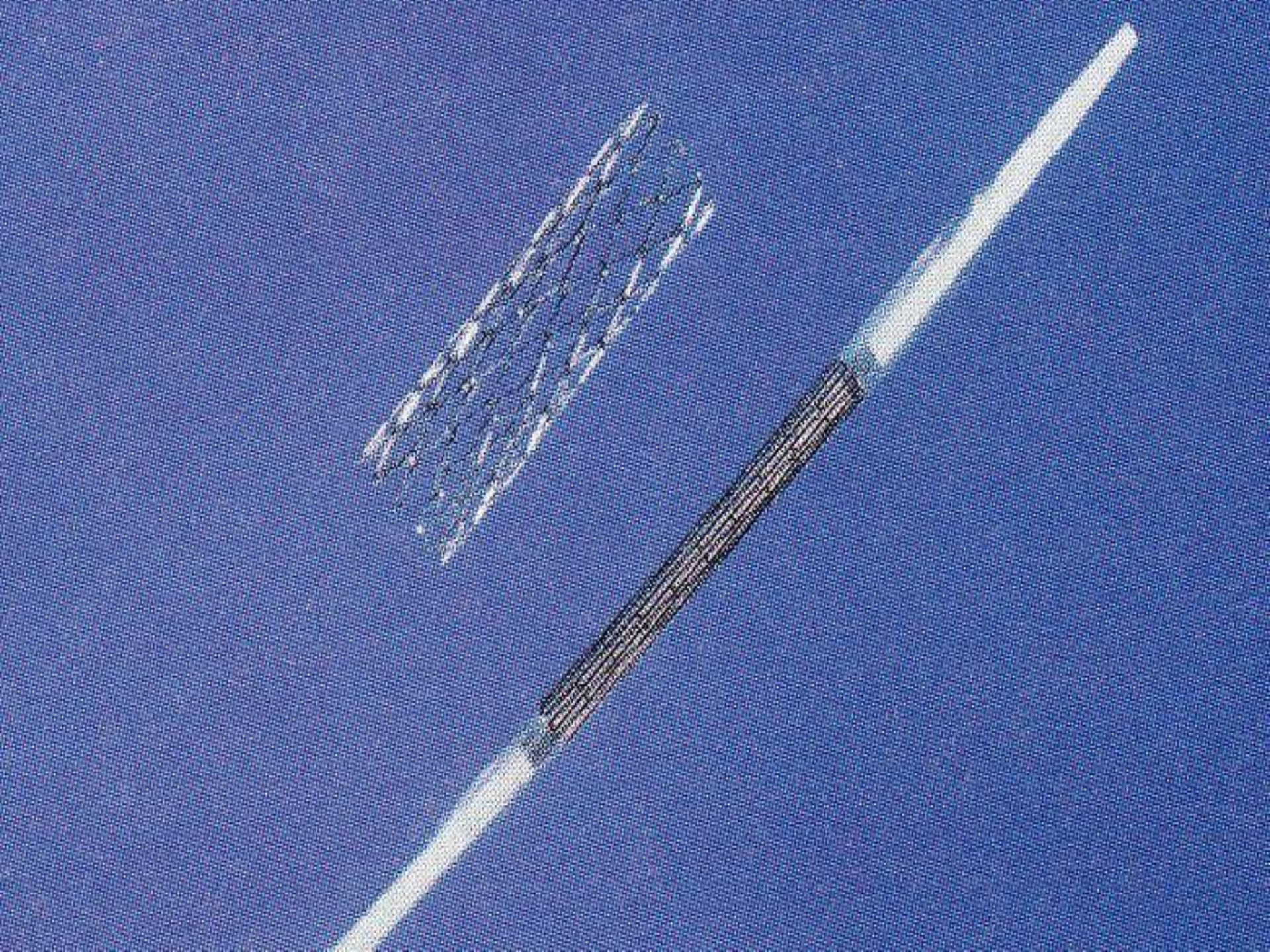


FIGURE 37–1 Devices for percutaneous transluminal coronary interventions. **A,** Coronary balloon. **B,** Rotational atherectomy burr (Rotablator). **C,** Coronary stent.

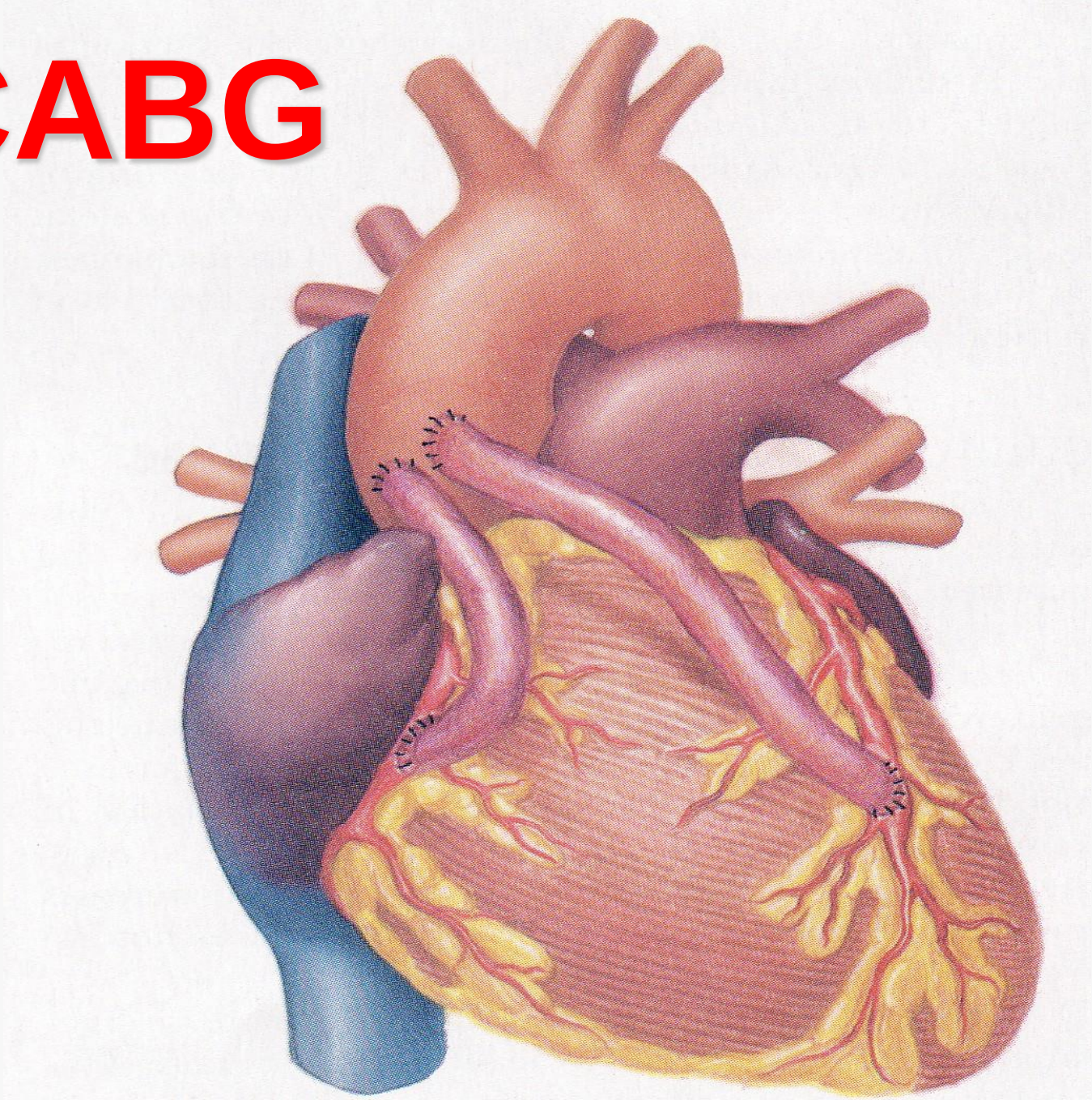

A

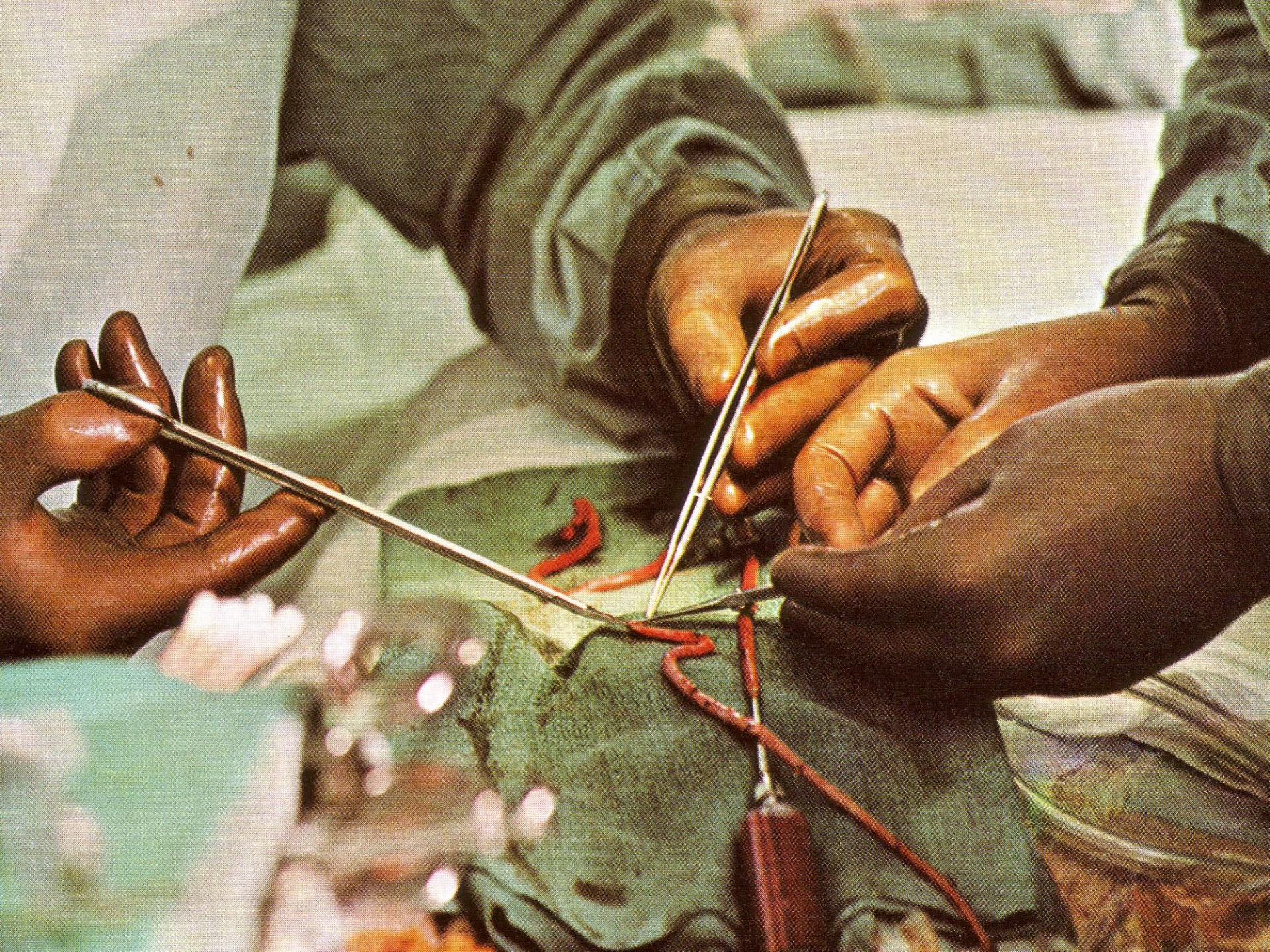

B

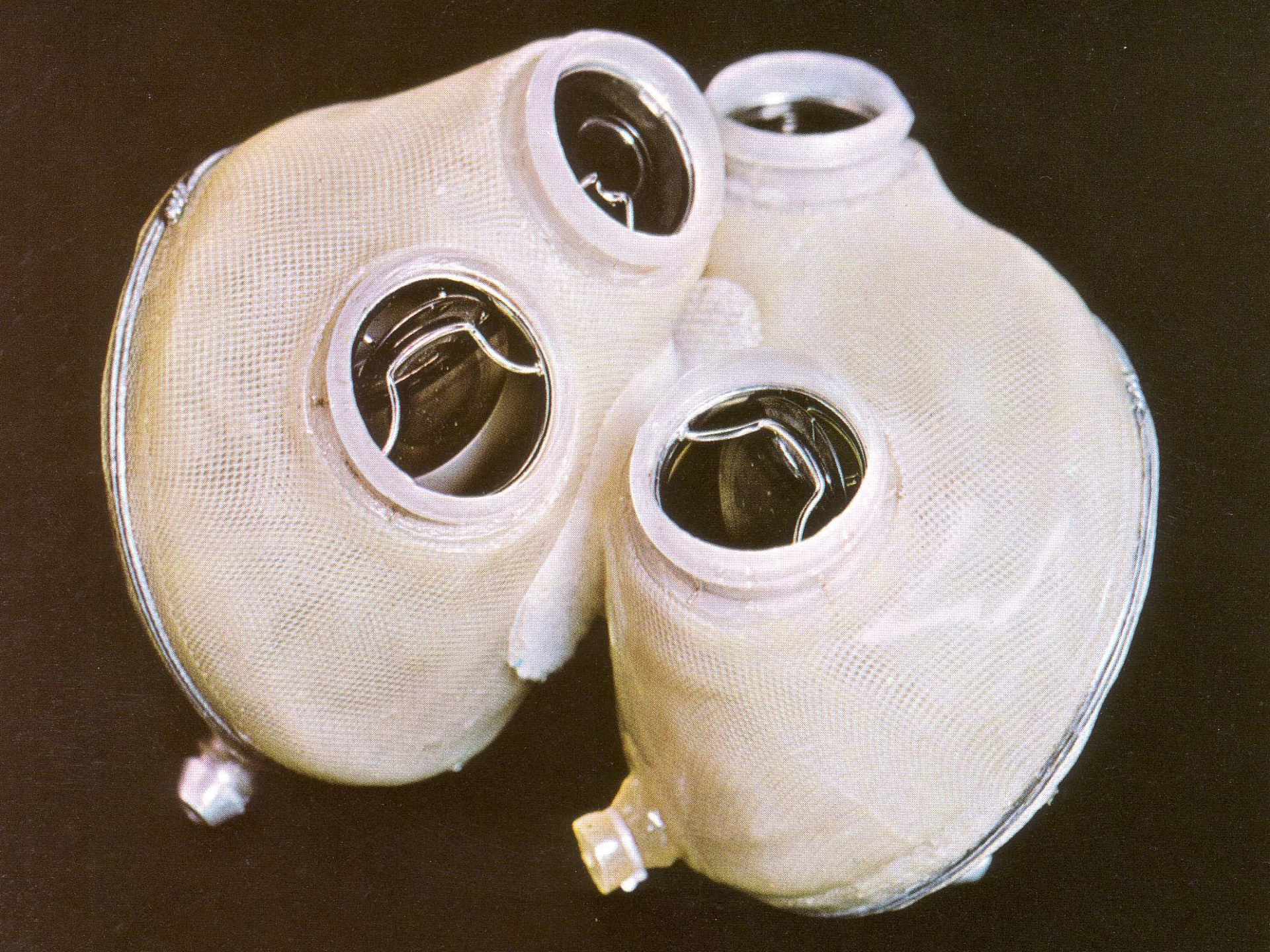

C

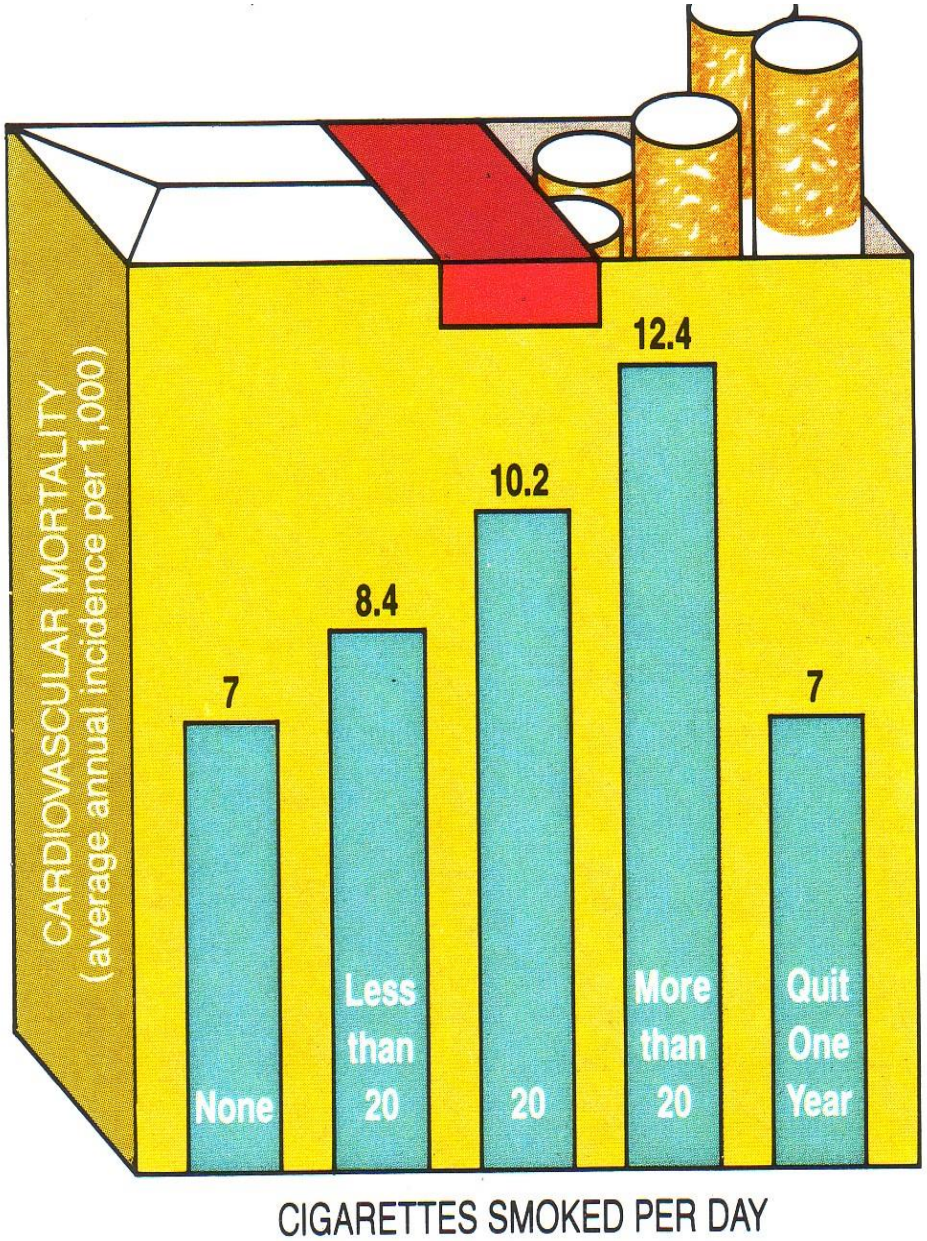


CABG








CARDIOVASCULAR MORTALITY
(average annual incidence per 1,000)
7
8.4
10.2
12.4
7
None
Less than 20
20
More than 20
Quit One Year
CIGARETTES SMOKED PER DAY

Tobacco-free Campus

For better health, smoking and use of tobacco products are prohibited everywhere on our property.

SMOKE AND TOBACCO-FREE UNIVERSITY

September 1, 2012

For a healthier community and cleaner environment, the University of Oregon will be smoke and tobacco free

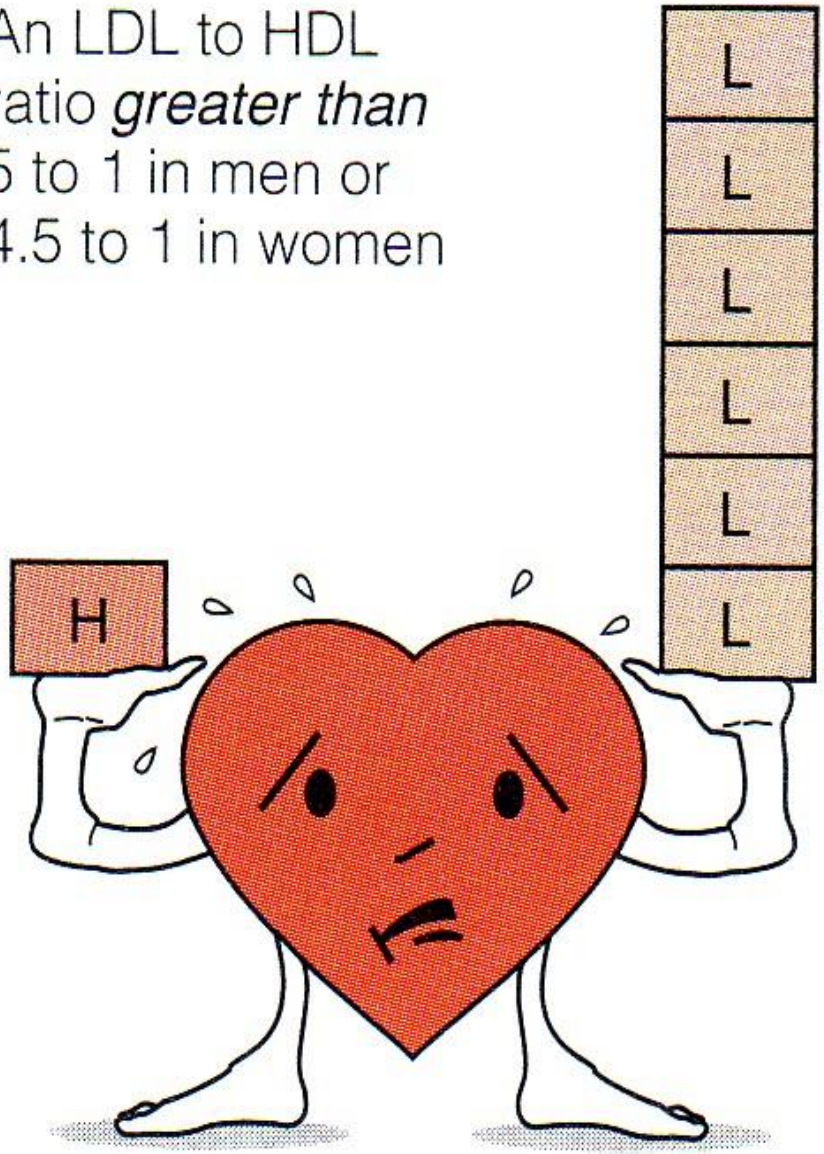
Ready to Quit Tobacco?

tobaccofree.uoregon.edu

For a healthier community and cleaner environment, the University of Oregon is smoke and tobacco-free.


KA-BOOM!
300/200
Hg

An LDL to HDL ratio *greater than* 5 to 1 in men or 4.5 to 1 in women

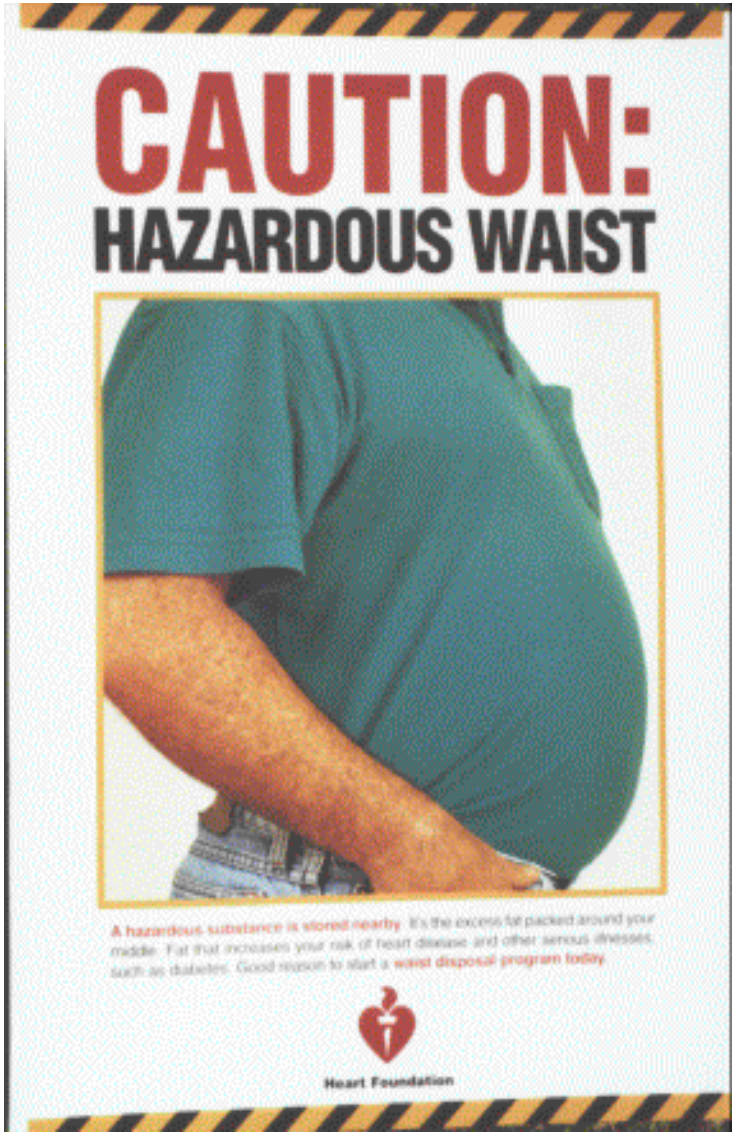


Increased risk of heart disease

Apple type of obesity predisposed to CVD!

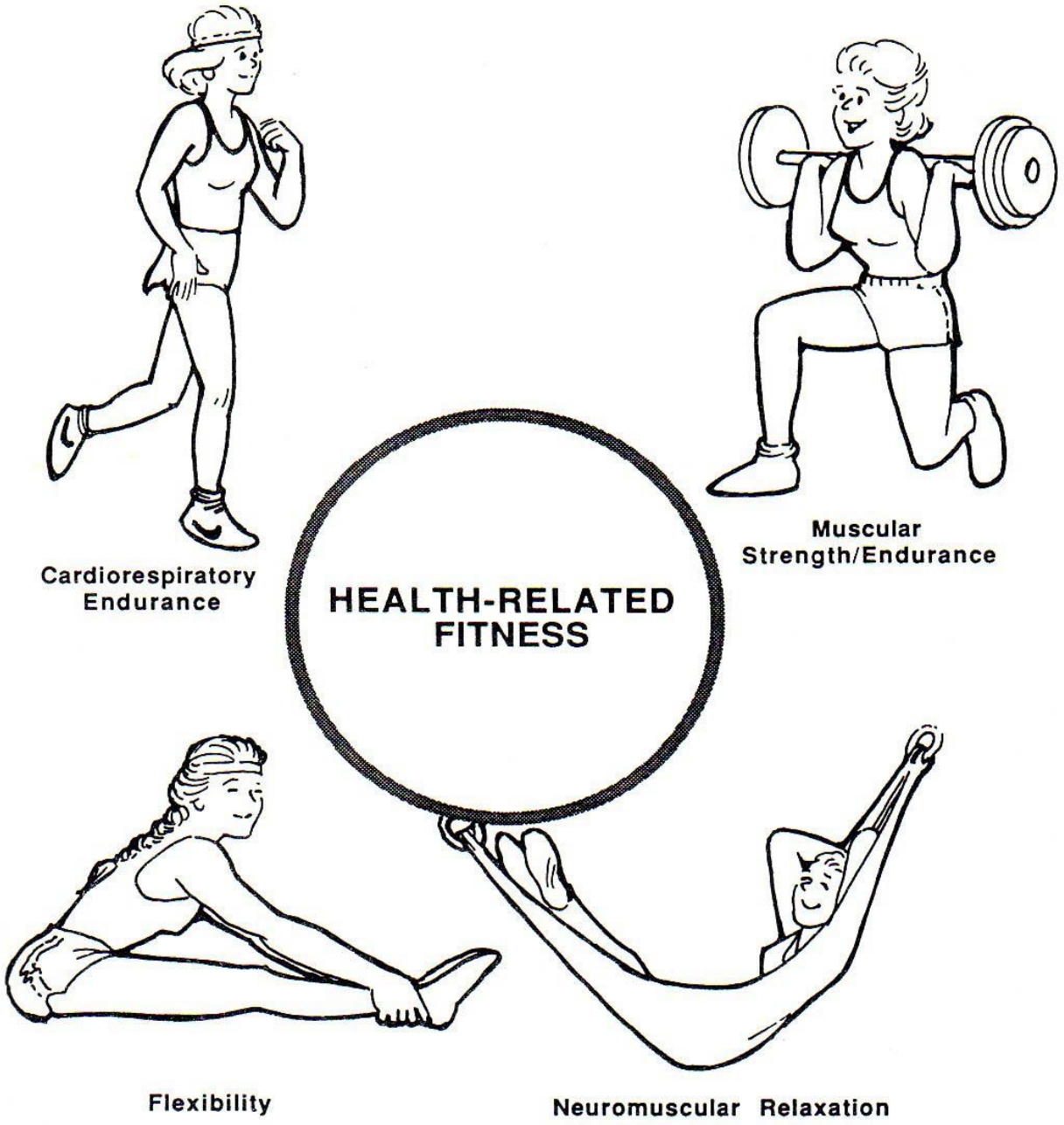
Pear **type of fat pattern…**

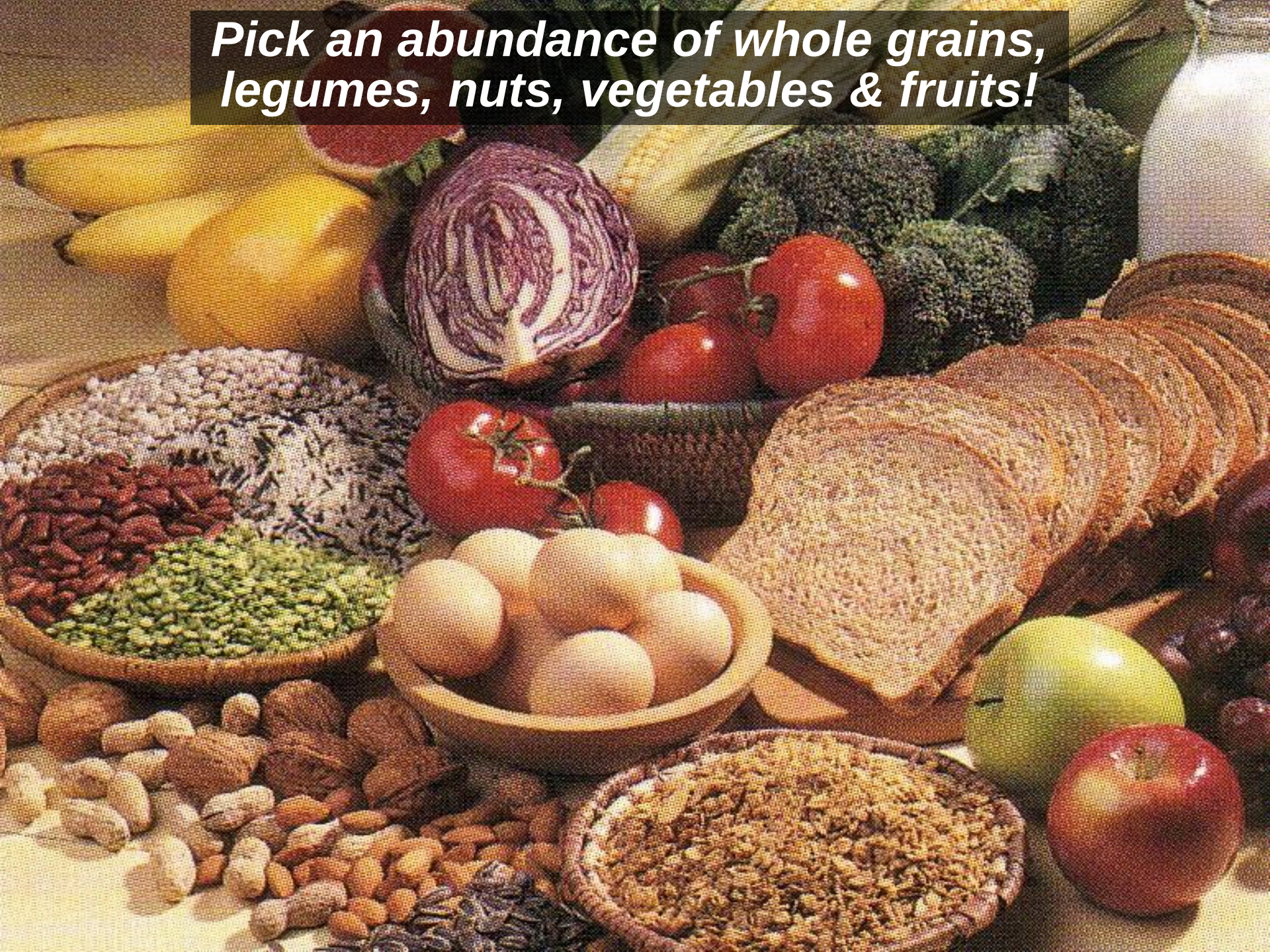
implies lower disease risk!



Eat more apples…

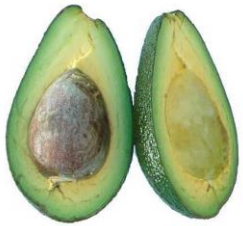
to help prevent the apple type of obesity!

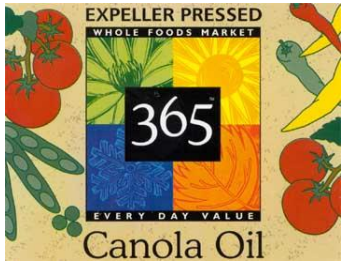

HEALTH-RELATED FITNESS
Cardiorespiratory Endurance
Muscular Strength/Endurance
Flexibility
Neuromuscular Relaxation

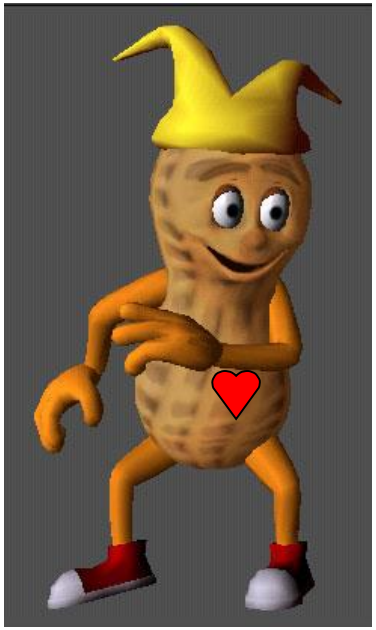

Pick an abundance of whole grains,
legumes, nuts, vegetables & fruits!

Healthy Oils to Minimize Atherosclerosis

HAPOC?



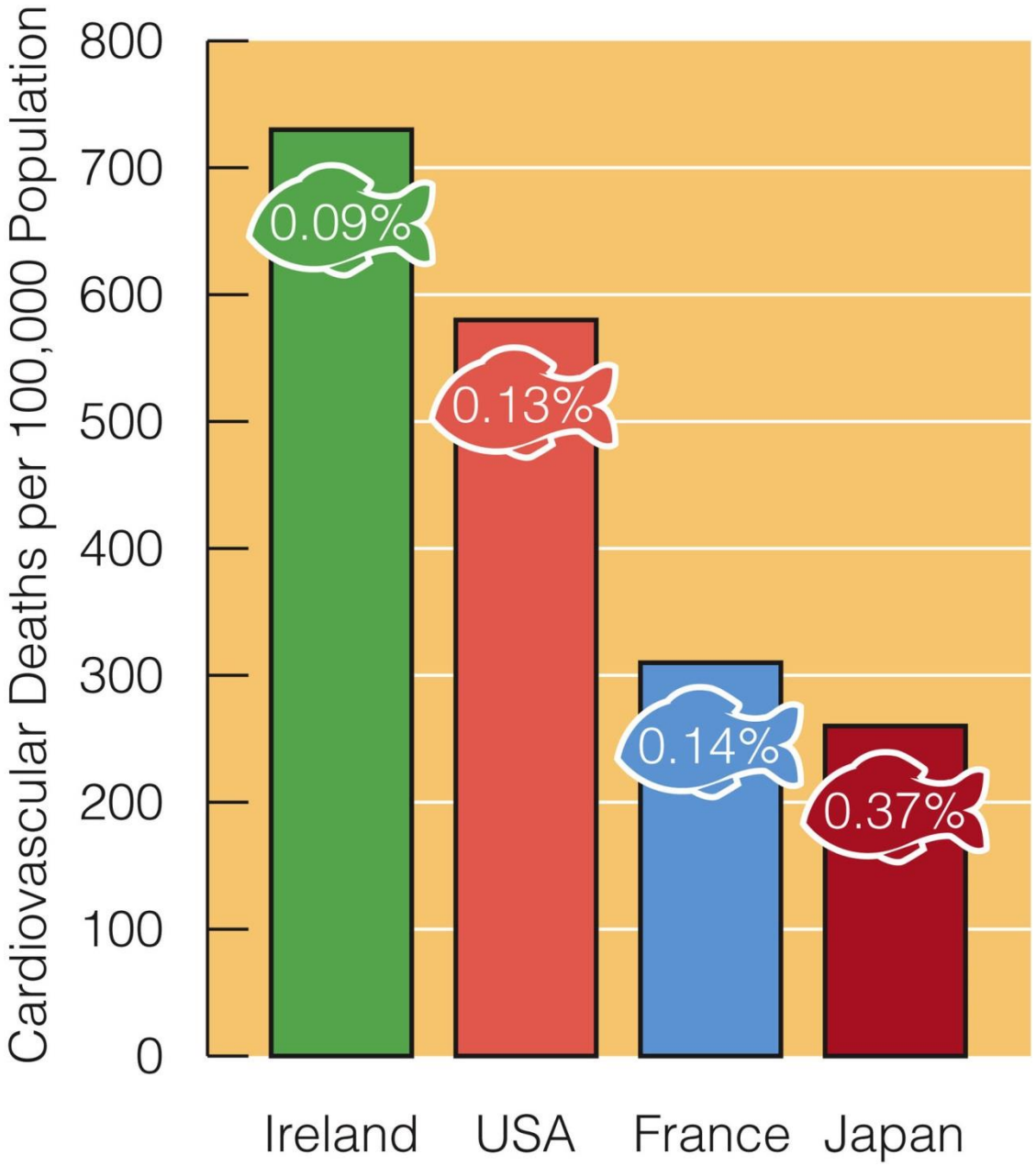




Olive Oil Loves Olive Oil & has some heartfelt advise for Popeye!!

Yes for the spinach! — but get rid of the pipe!!

Fish Oil Intakes & Cardiovascular Death Rates



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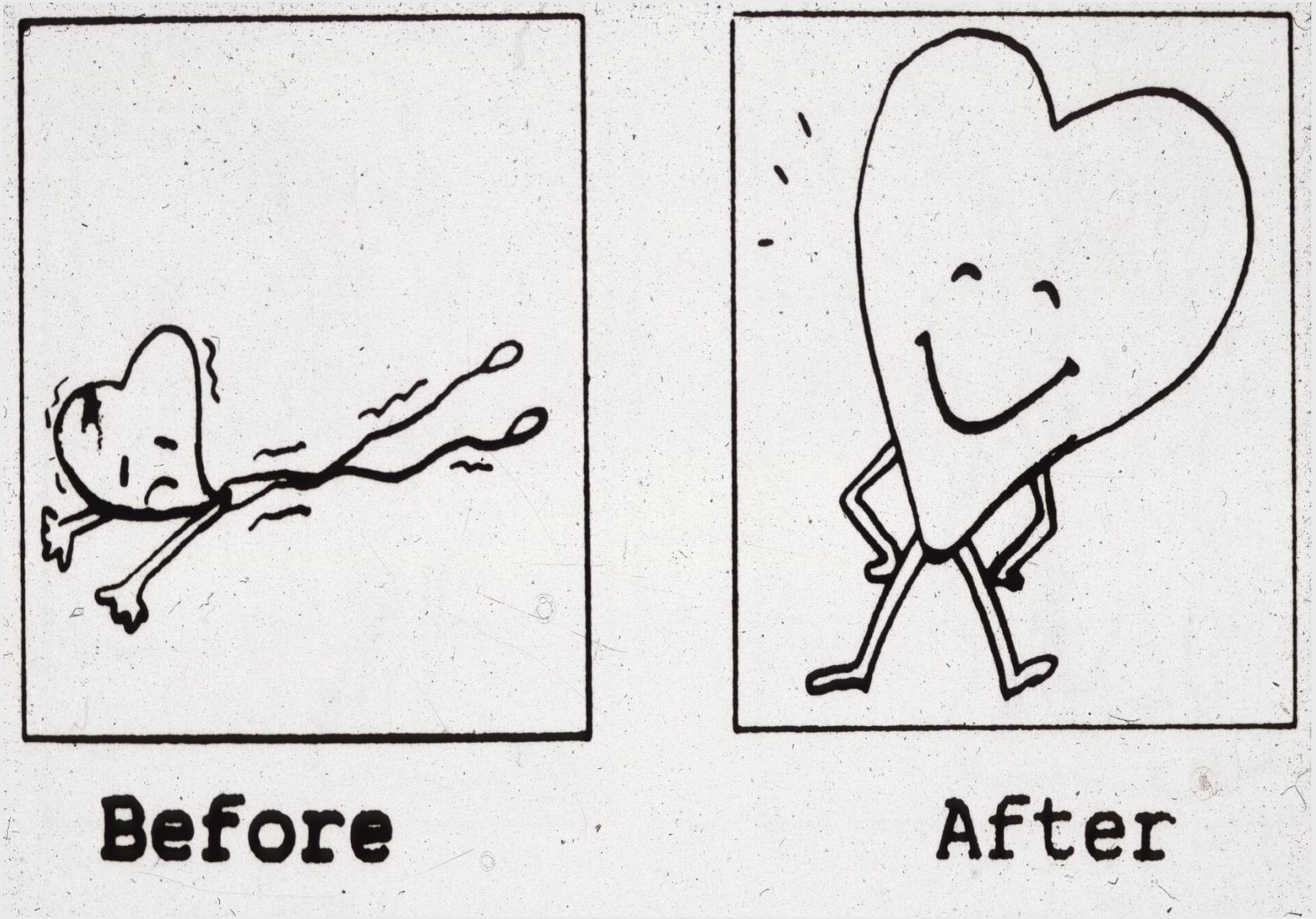
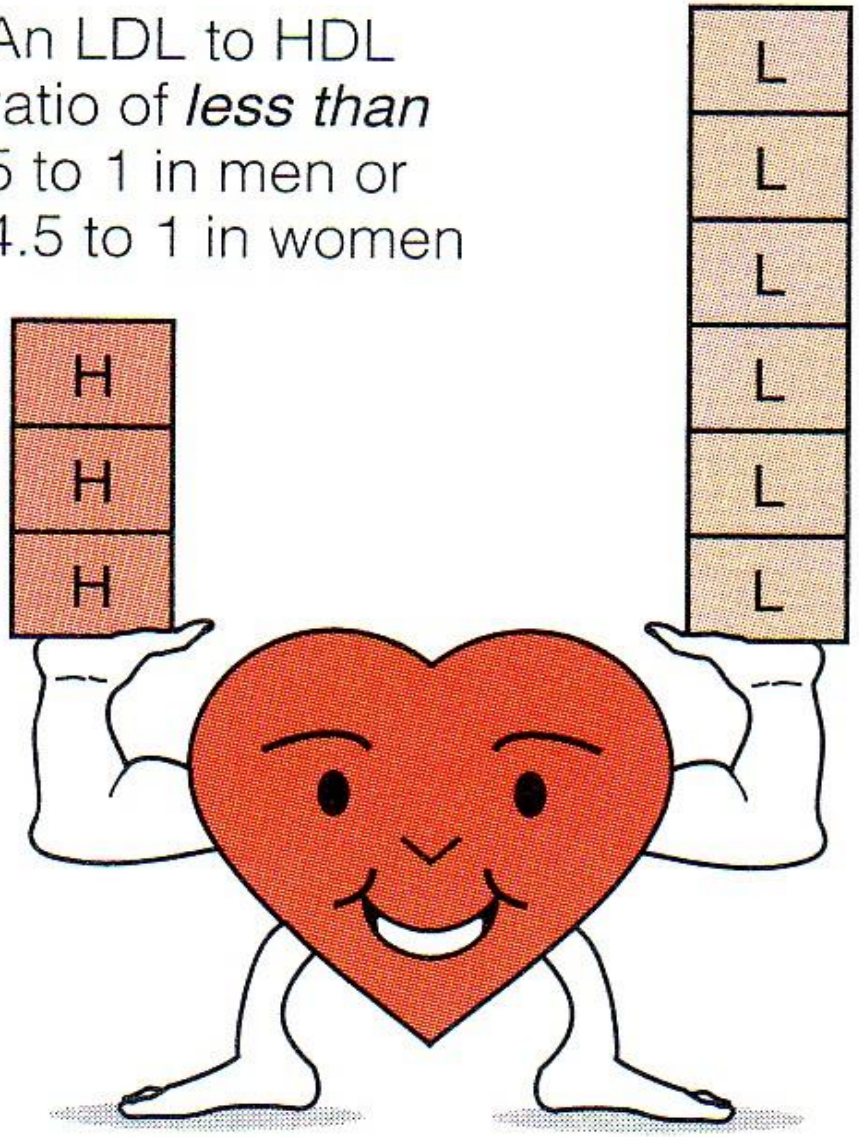
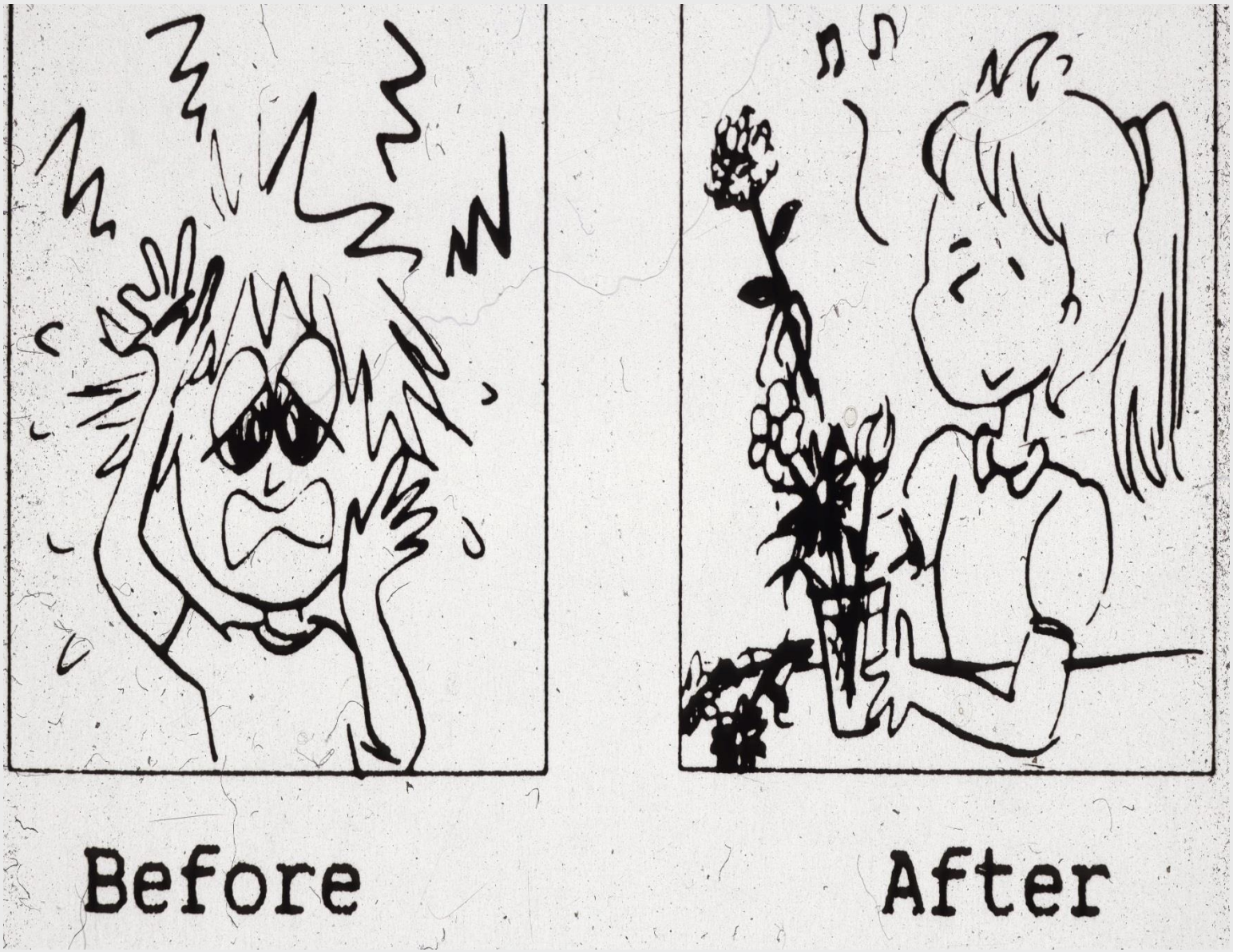
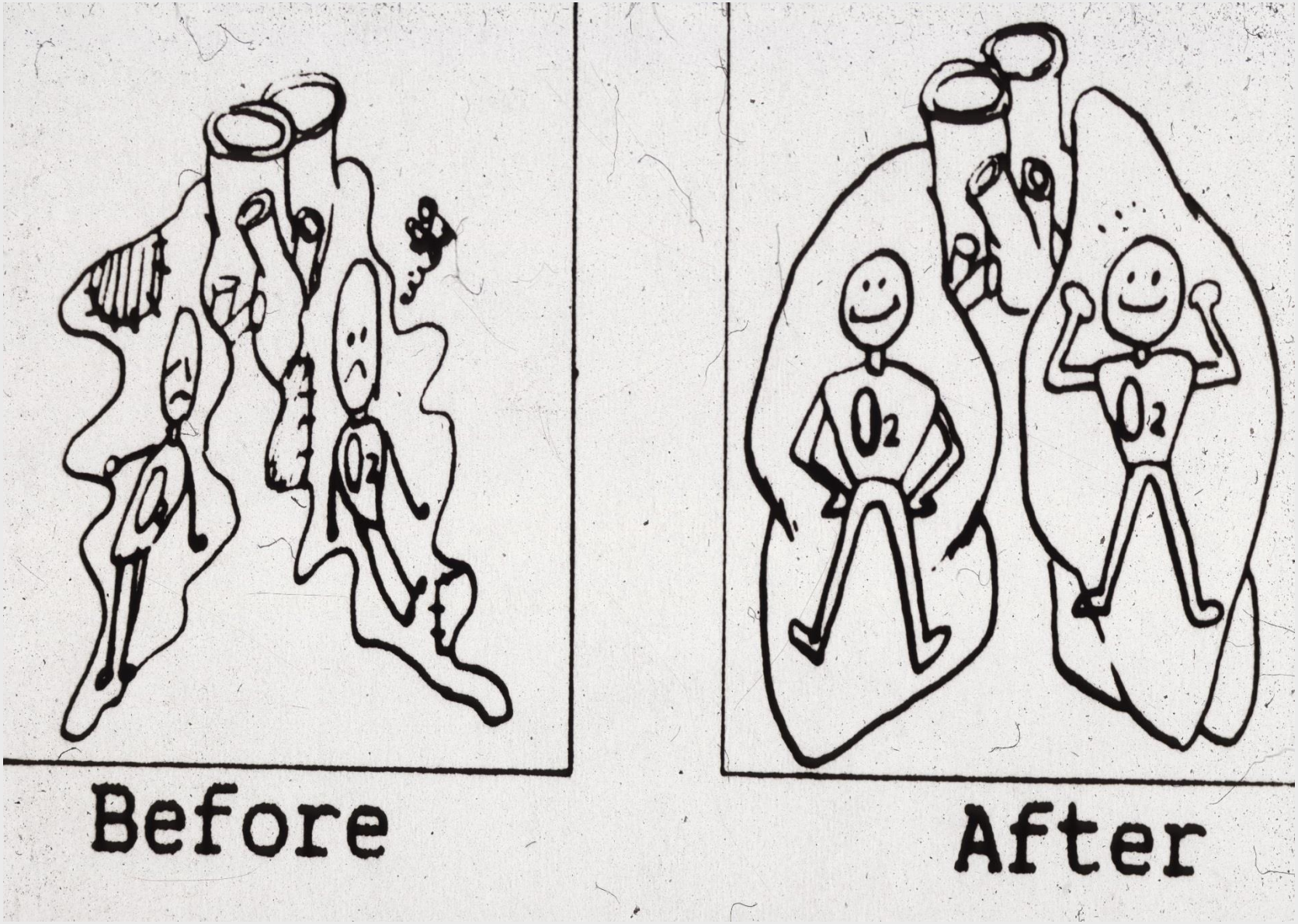

Before
After

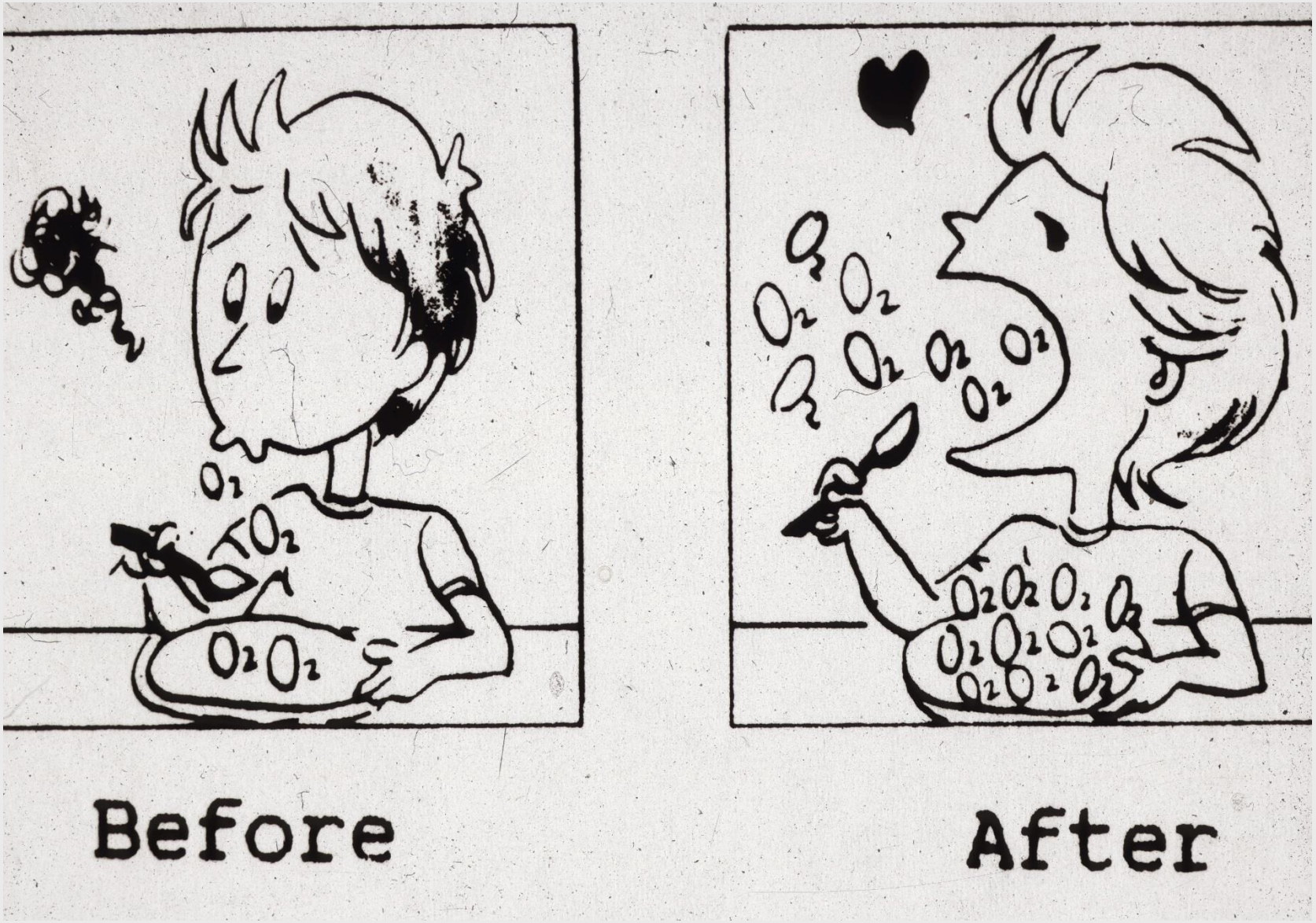
An LDL to HDL ratio of *less than* 5 to 1 in men or 4.5 to 1 in women

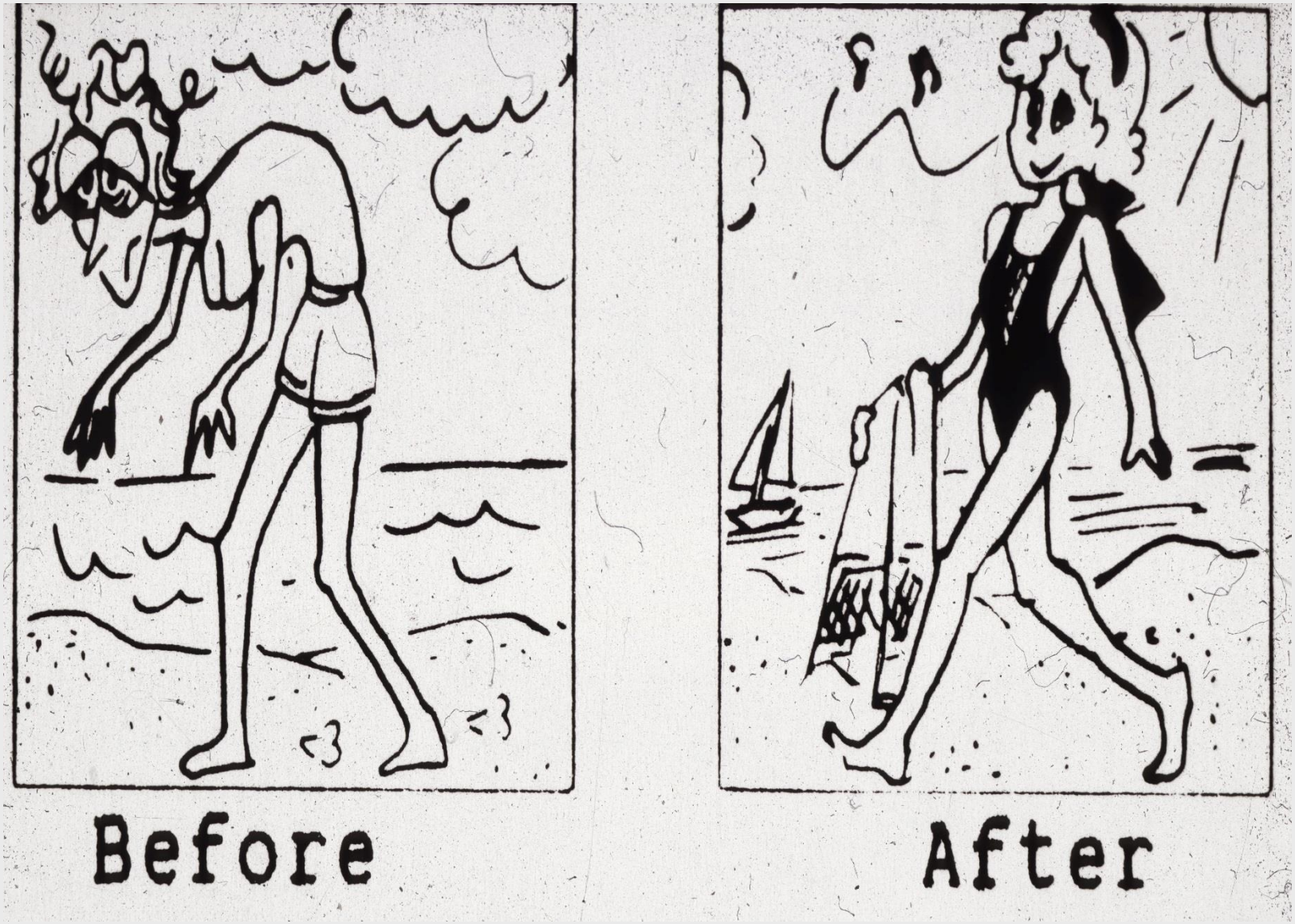


Reduced risk of heart disease


Before
After


Before
After


Before
After


Before
After