



## BI 121 Lecture 8

- I. Announcements** **Exam I next session; 11 am & 12 n lab sections go directly to 11 PAC & 12 PAC. All others here (100 WIL)! Review: Sunday, 6 pm 100 WIL!** Lab notebooks. Q?
- II. Cardiovascular Connections** LS 2012 ch 9, Torstar Books+...
- III. CV Physiology in News** AHA + NHLBI websites. Nic? ACSM, AHA, DHHS Healthy people exercise guidelines!
- IV. 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?

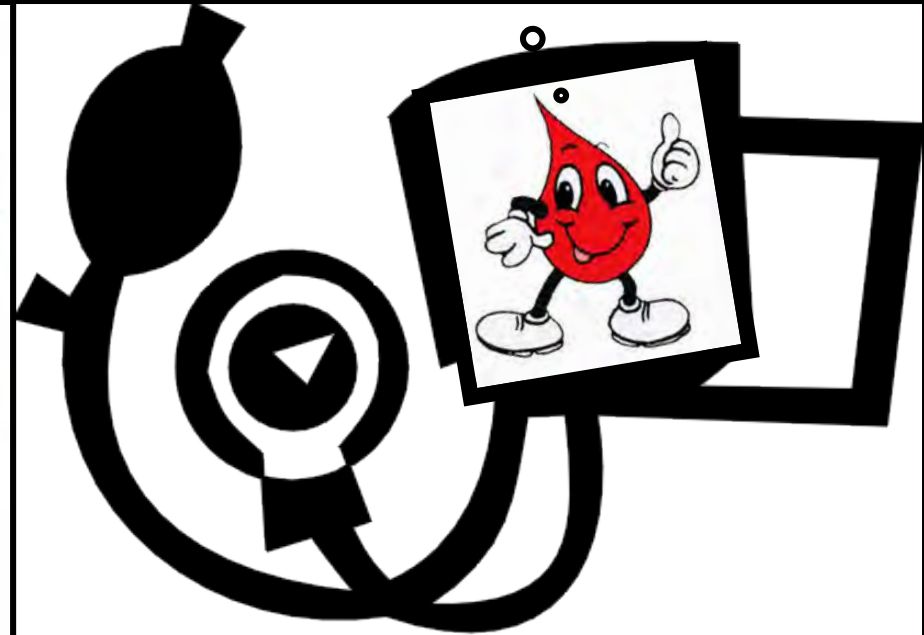


# *Heart-Blood Pressure Lab Today!*

Lub-dup!



I'm cool!

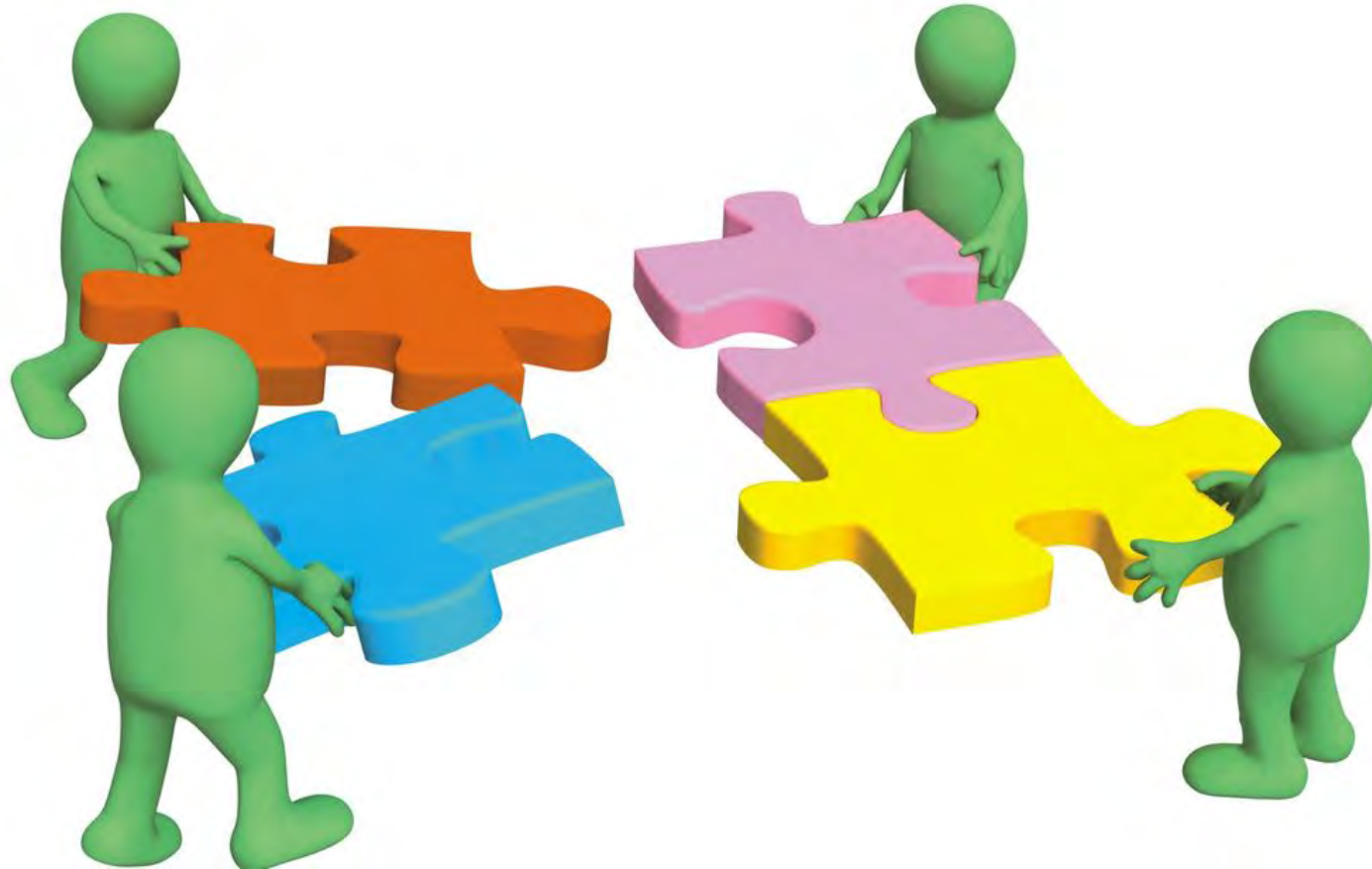


**11 am lab section takes Exam  
on Tuesday in 11 Pacific (PAC)  
12 n lab section takes Exam  
on Tuesday in 12 Pacific (PAC)  
All others here (100 WIL)!**

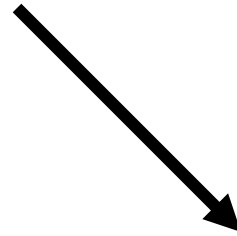
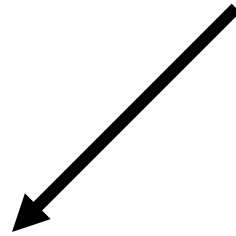


**Study & blast  
the exam!**

# *Study Groups?*



# Cardiac Cycle

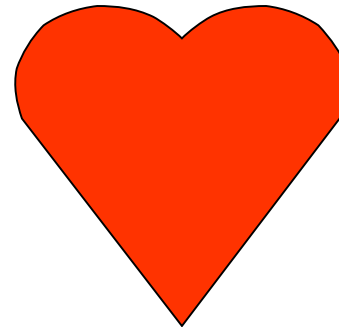
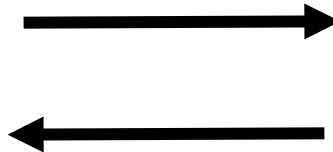
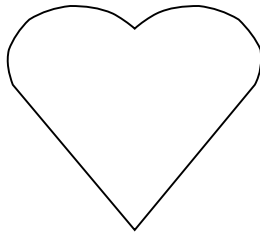


***Systole***

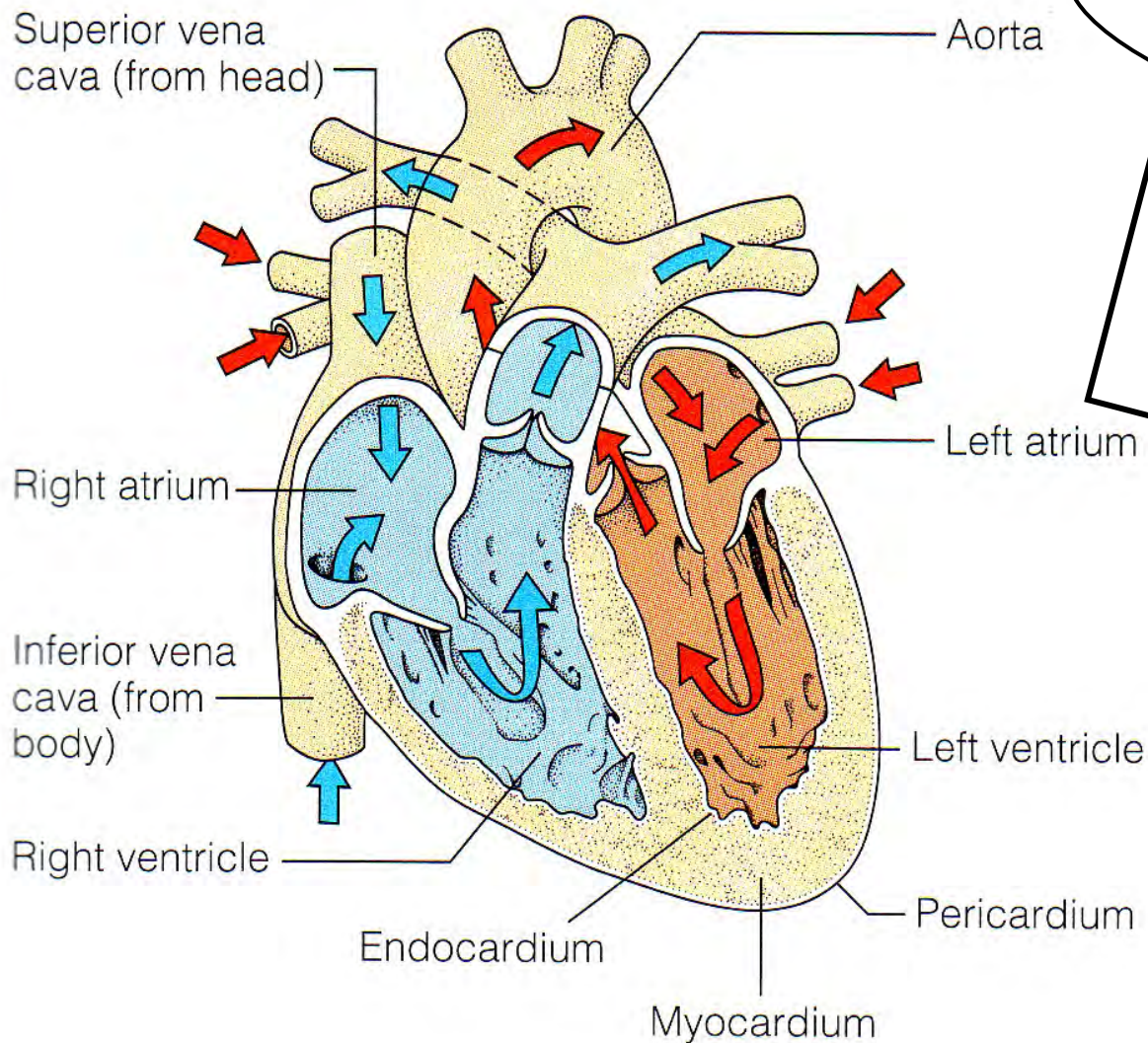
Contract  
& Empty

***Diastole***

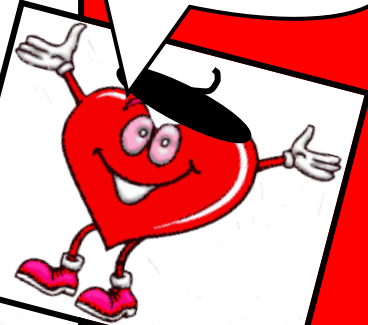
Relax  
& Fill



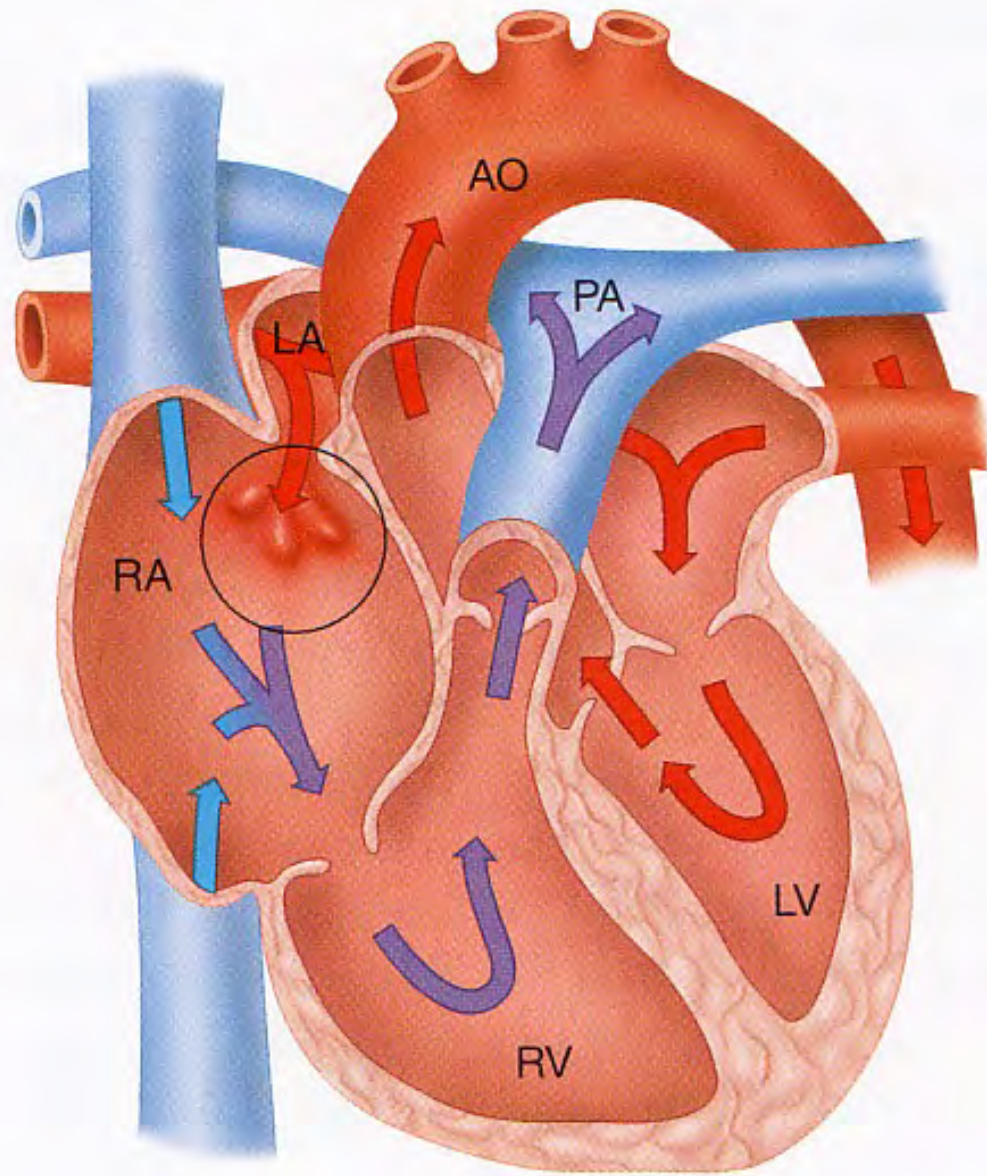
# Veins → Atria → Ventricles → Arteries



VAVA!

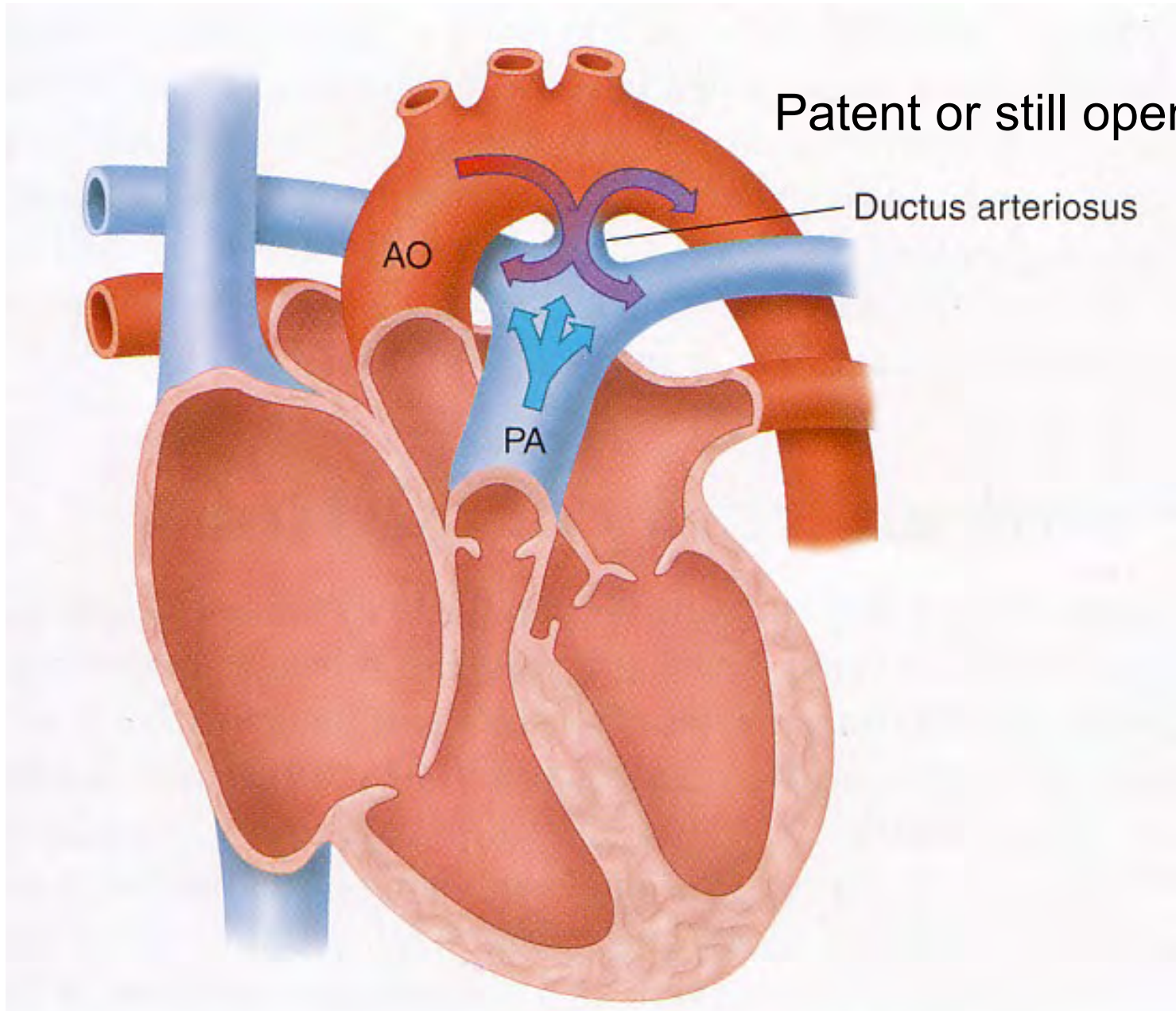


<http://www.nhlbi.nih.gov/health/health-topics/topics/hhw/contraction.html>



SI Fox 2009 fig 13.16 p 419

Septal defect  
in atria





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

**<http://www.heart.org/>**



**<http://www.nhlbi.nih.gov/health/>**

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!





**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**



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

**OR**

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

**AND**

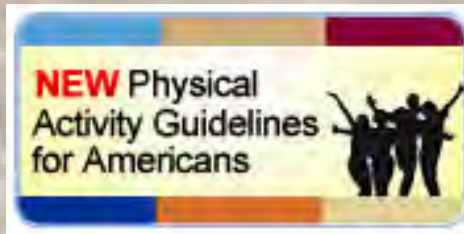
**Do 8-10 strength-training exercises  
8-12 repetitions/each exercise, 2 d/wk**



S

yr)

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



**Adults: Moderate to Vigorous Exercise  $\geq$  30 min, 5 d/wk**

**Children: Moderate to Vigorous Exercise  $\geq$  60 min, 5 d/wk**

# CVDs

AMI

CVA



TIA

HTN

PVD

# Did you know?

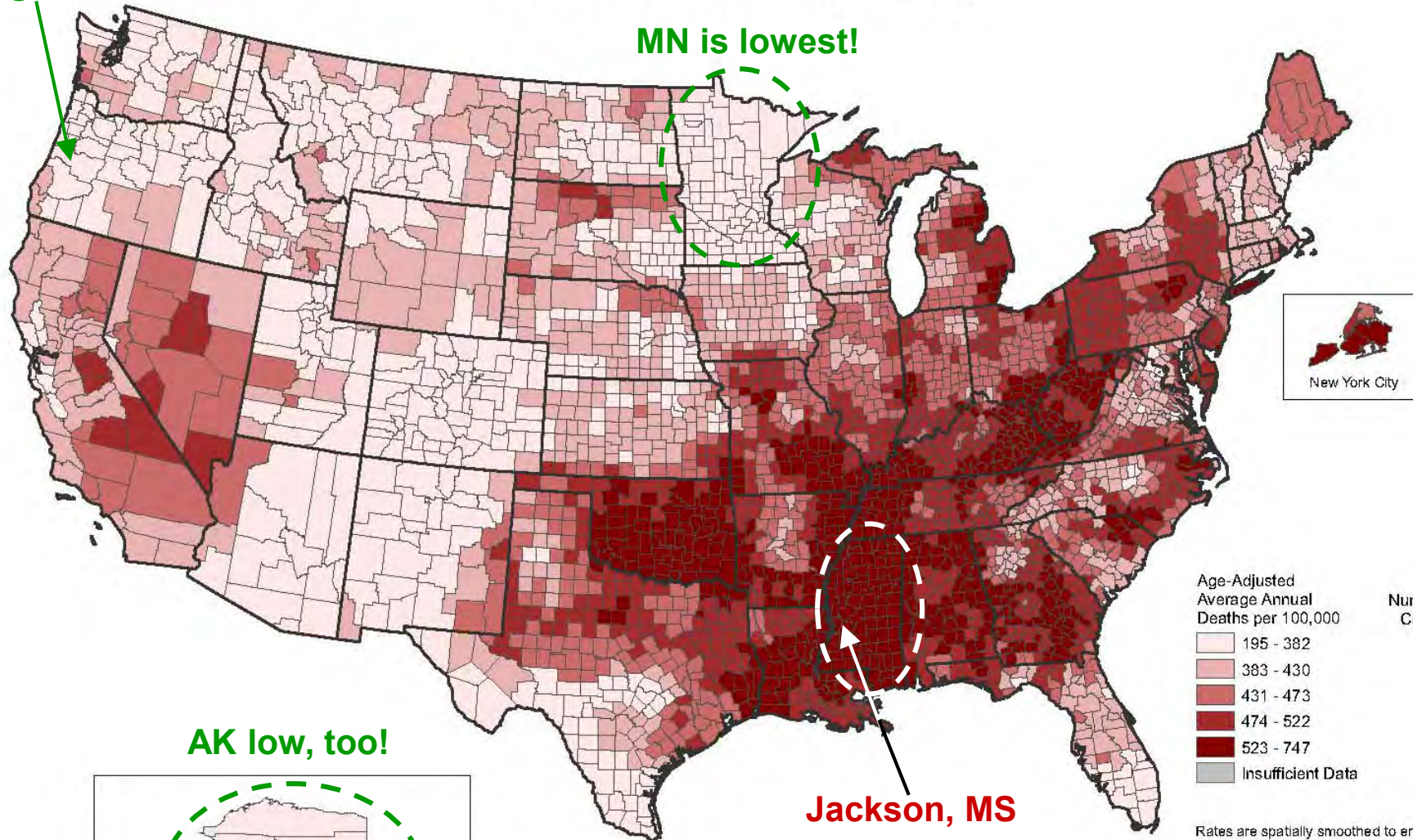
- **Every year ~785,000 Americans have a first heart attack. Another 470,000 who've had  $\geq 1$  have another attack.**
- **In 2008, > 616,000 people died of heart disease. Heart disease caused almost 25% of deaths in the US.**
- **In 2010, coronary heart disease US costs ~\$108.9 billion including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



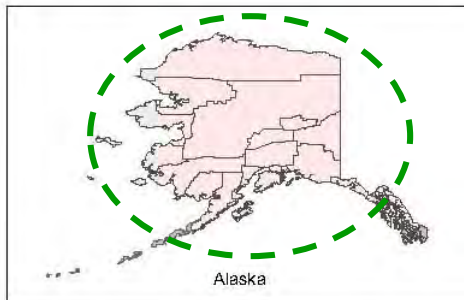
# Heart Disease Death Rates, 2000-2006 Adults Ages 35+, by County

Eugene, OR

MN is lowest!



AK low, too!



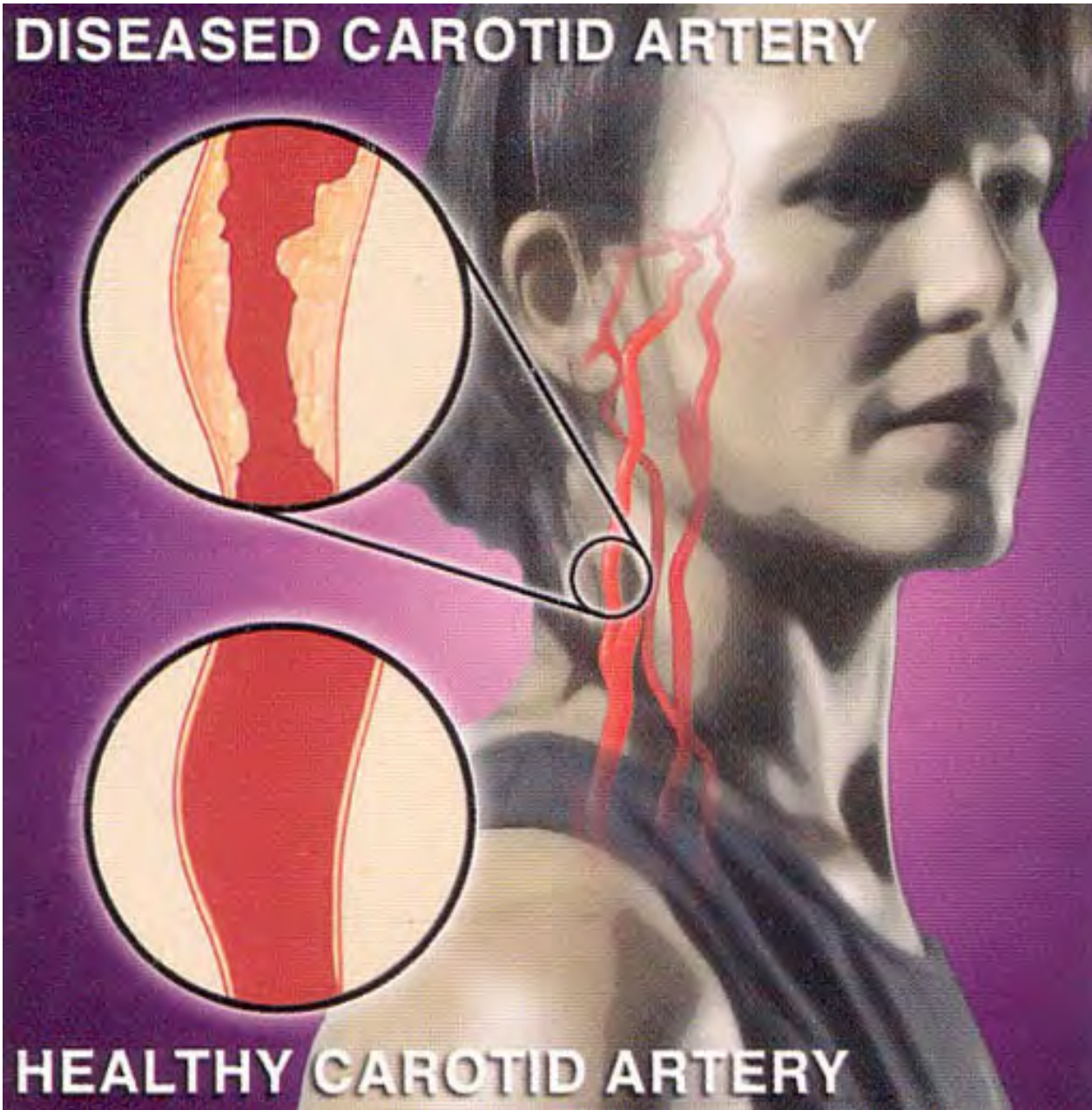
Jackson, MS

Age-Adjusted Average Annual Deaths per 100,000	Number of Counties
195 - 382	632
383 - 430	648
431 - 473	629
474 - 522	624
523 - 747	606
Insufficient Data	2

Rates are spatially smoothed to enhance the stability of rates in counties with small populations.

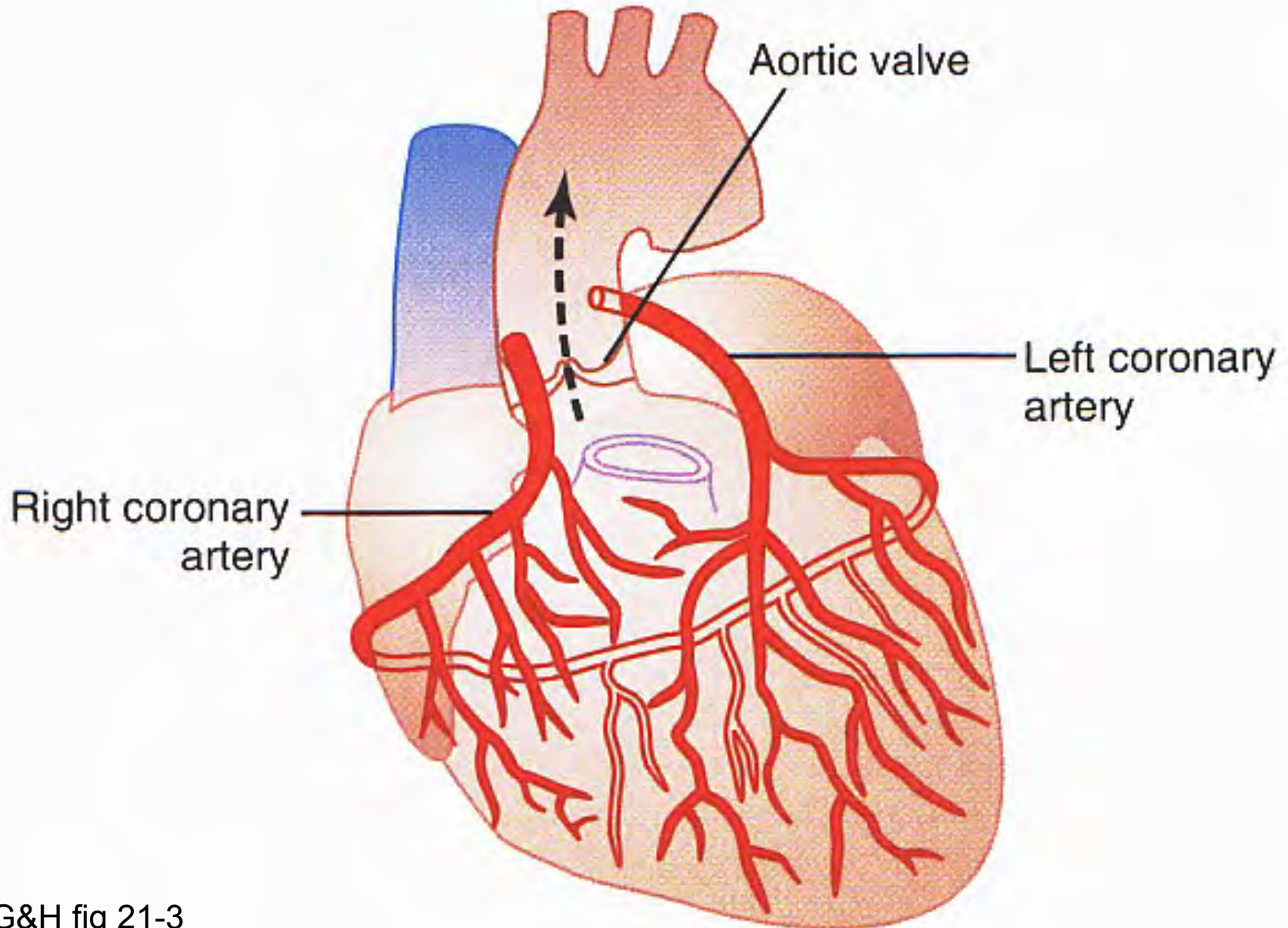
ICD-10 codes for heart disease: I00-I09, I11, I13, I20-I51

Data Source: National Vital Statistics System and the U.S. Census Bureau

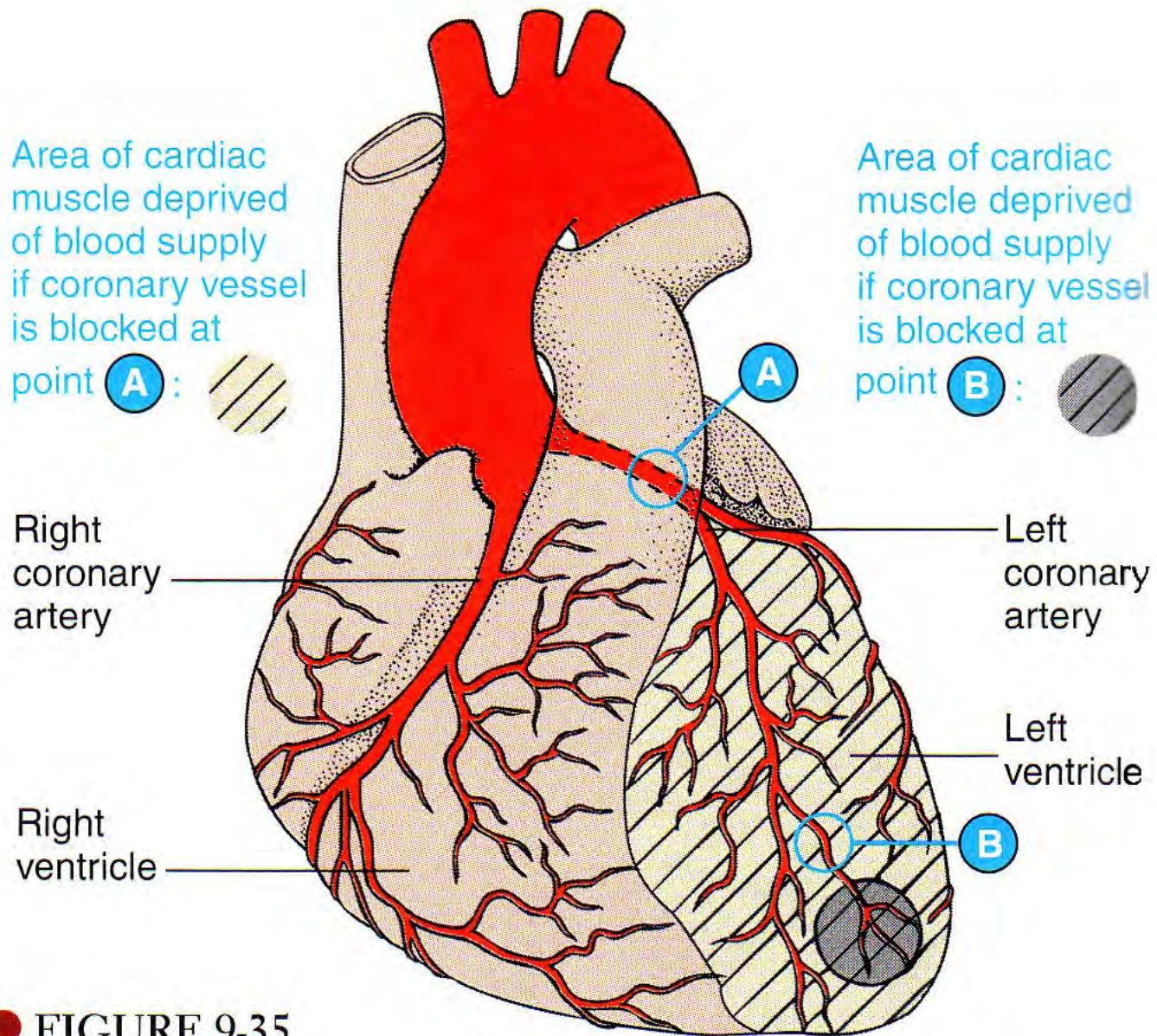


Source: Lifeline Screening, 2007

# ***Coronary Circulation ≡ Crowns the Heart!***

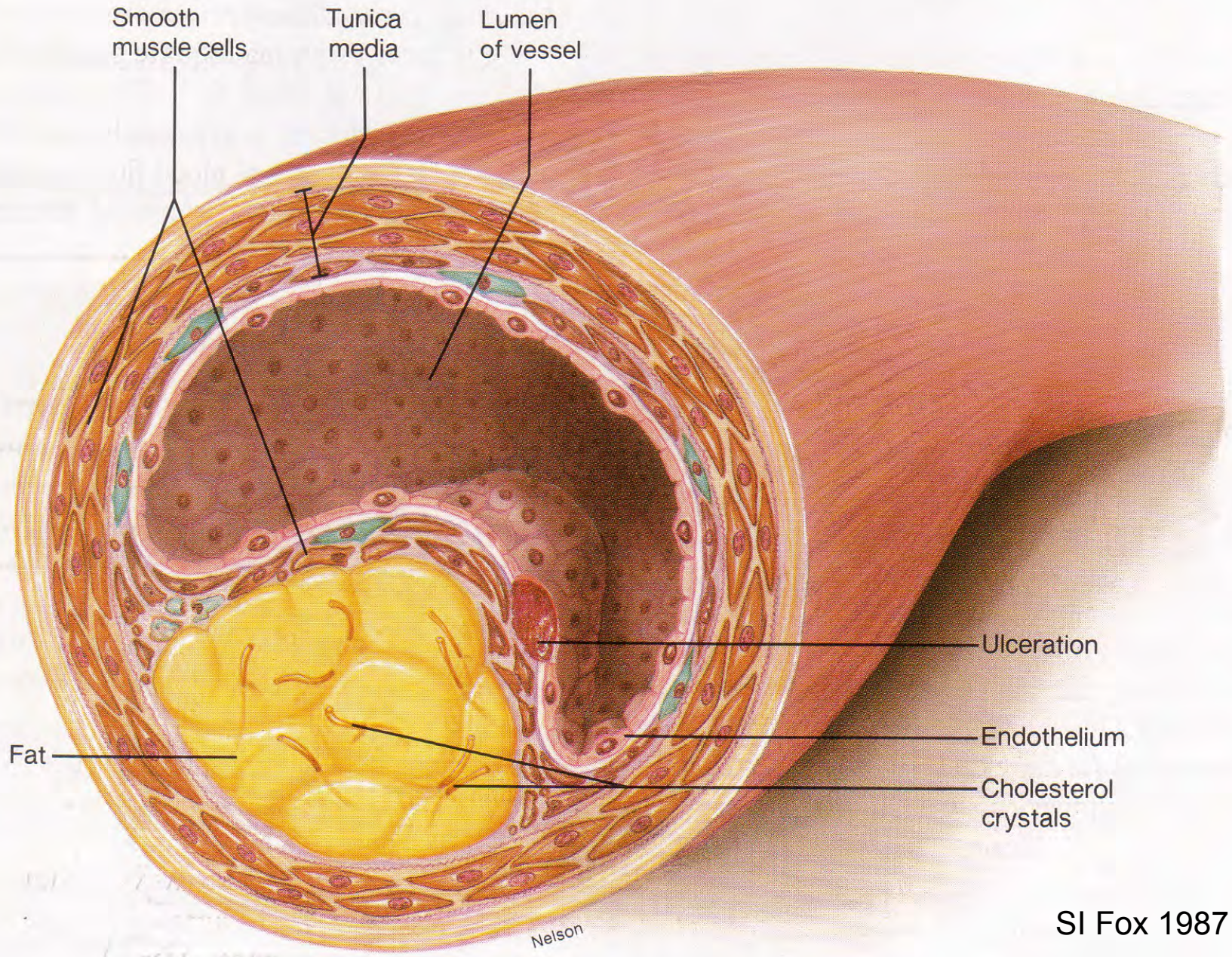






● **FIGURE 9-35**

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



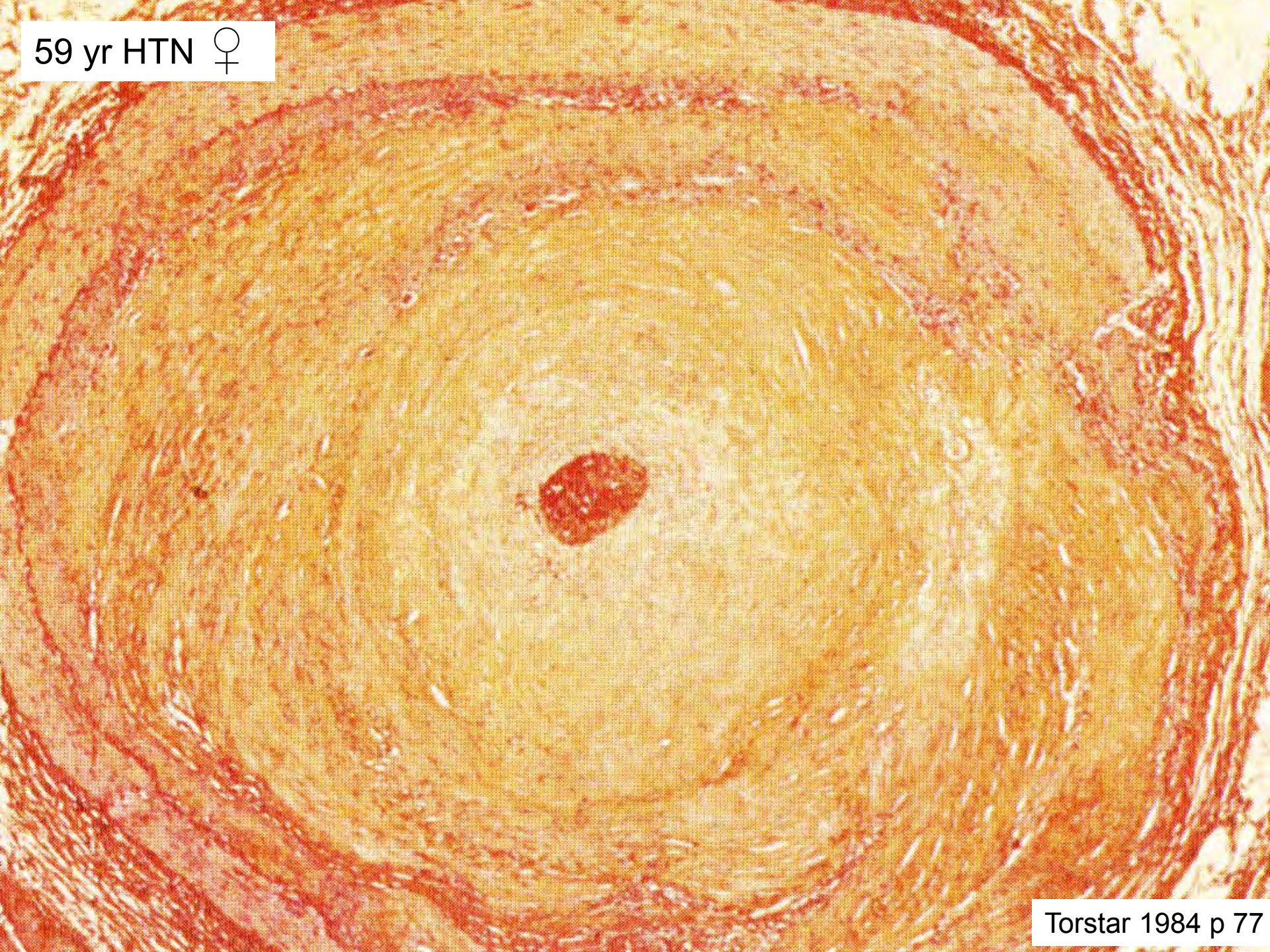
100 yr ♀







59 yr HTN ♀

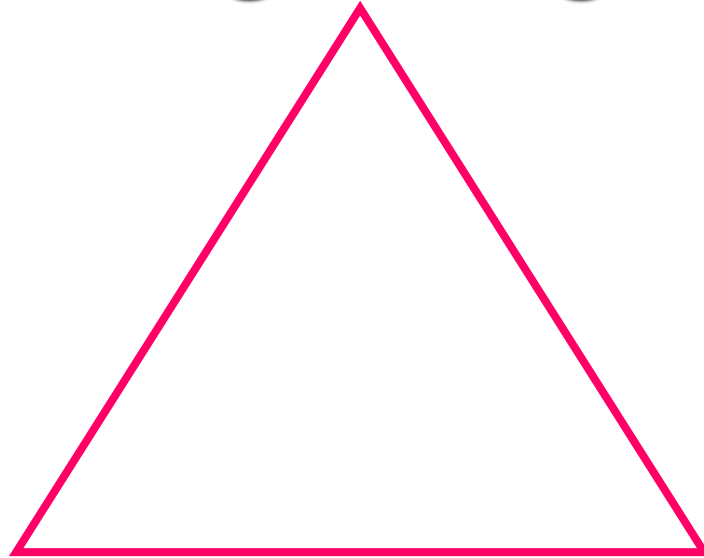


# *Treatment Triad*

NB: Last blasted resort!!

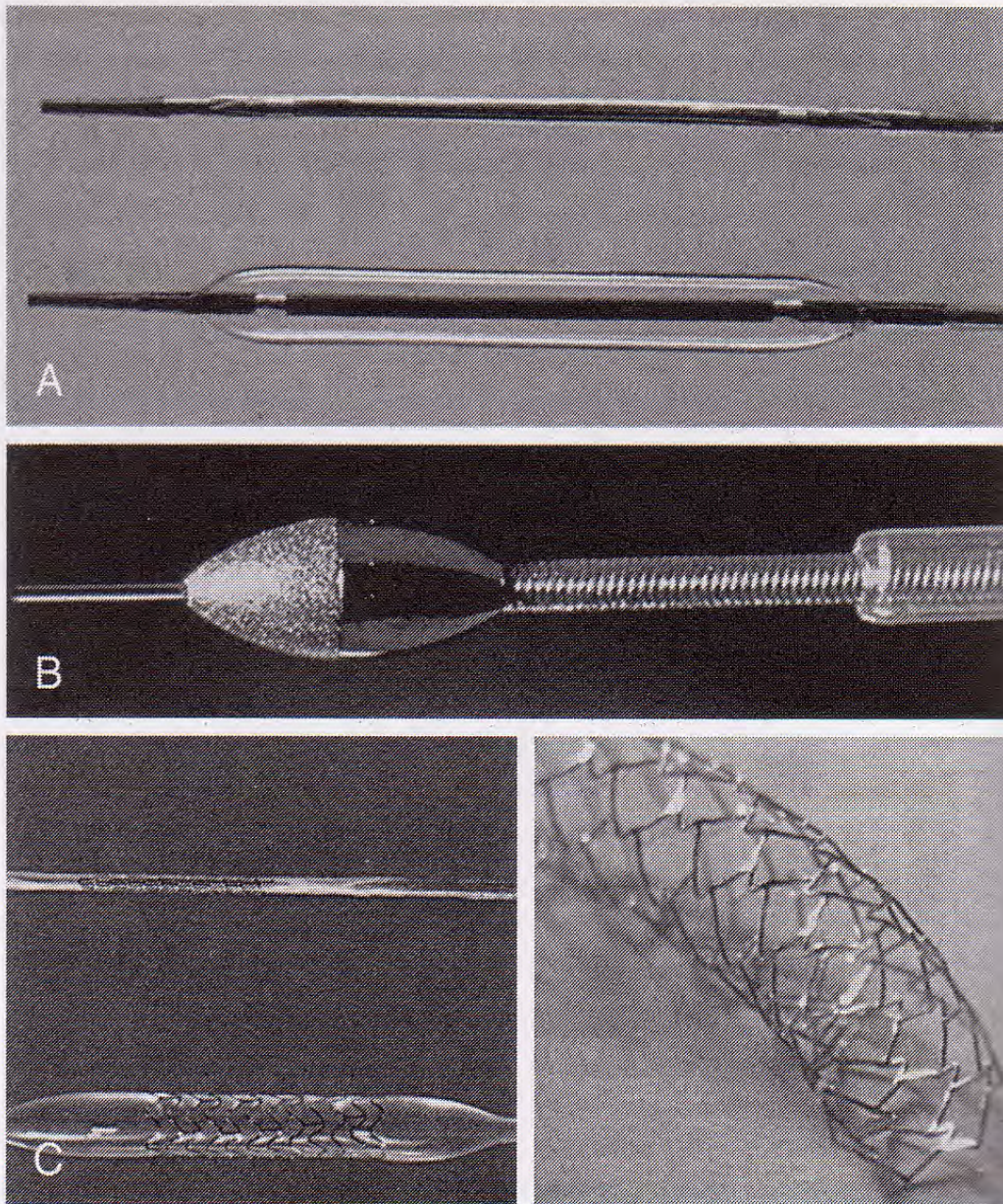


*Drugs/Surgery*



*Exercise*

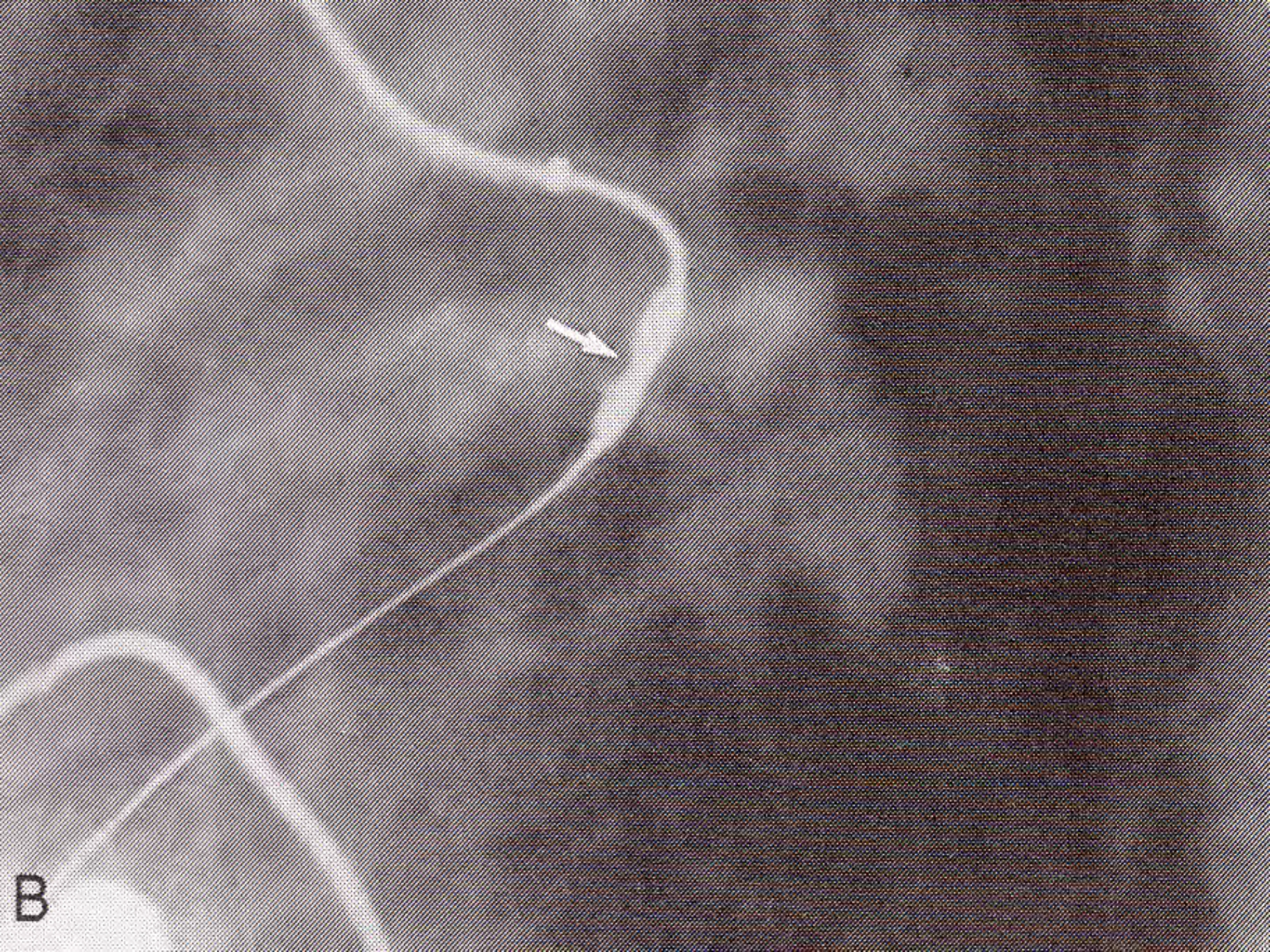
*Dietary  
Modification*



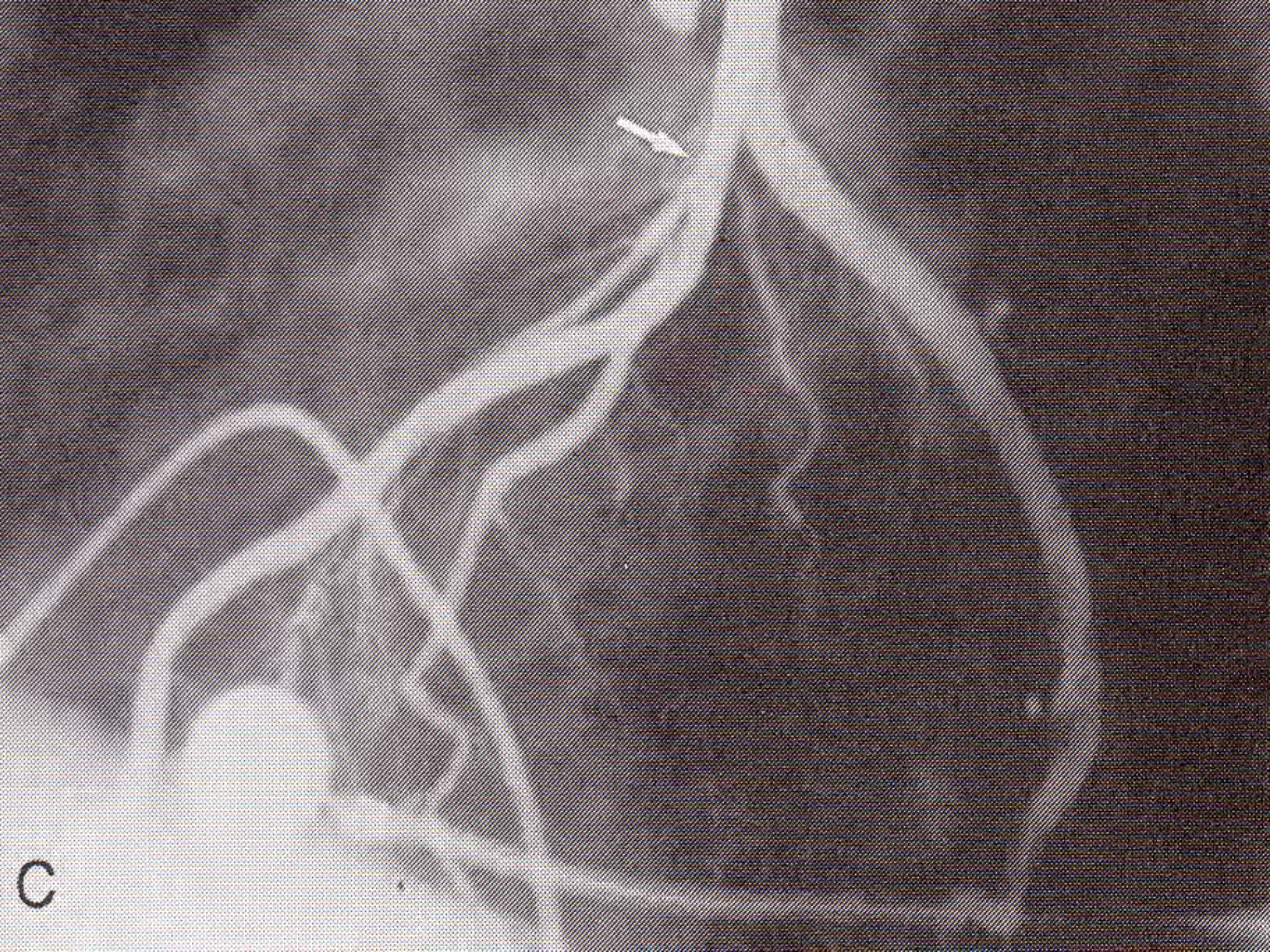
**FIGURE 37-1** Devices for percutaneous transluminal coronary interventions. **A**, Coronary balloon. **B**, Rotational atherectomy burr (Rotablator). **C**, Coronary stent.



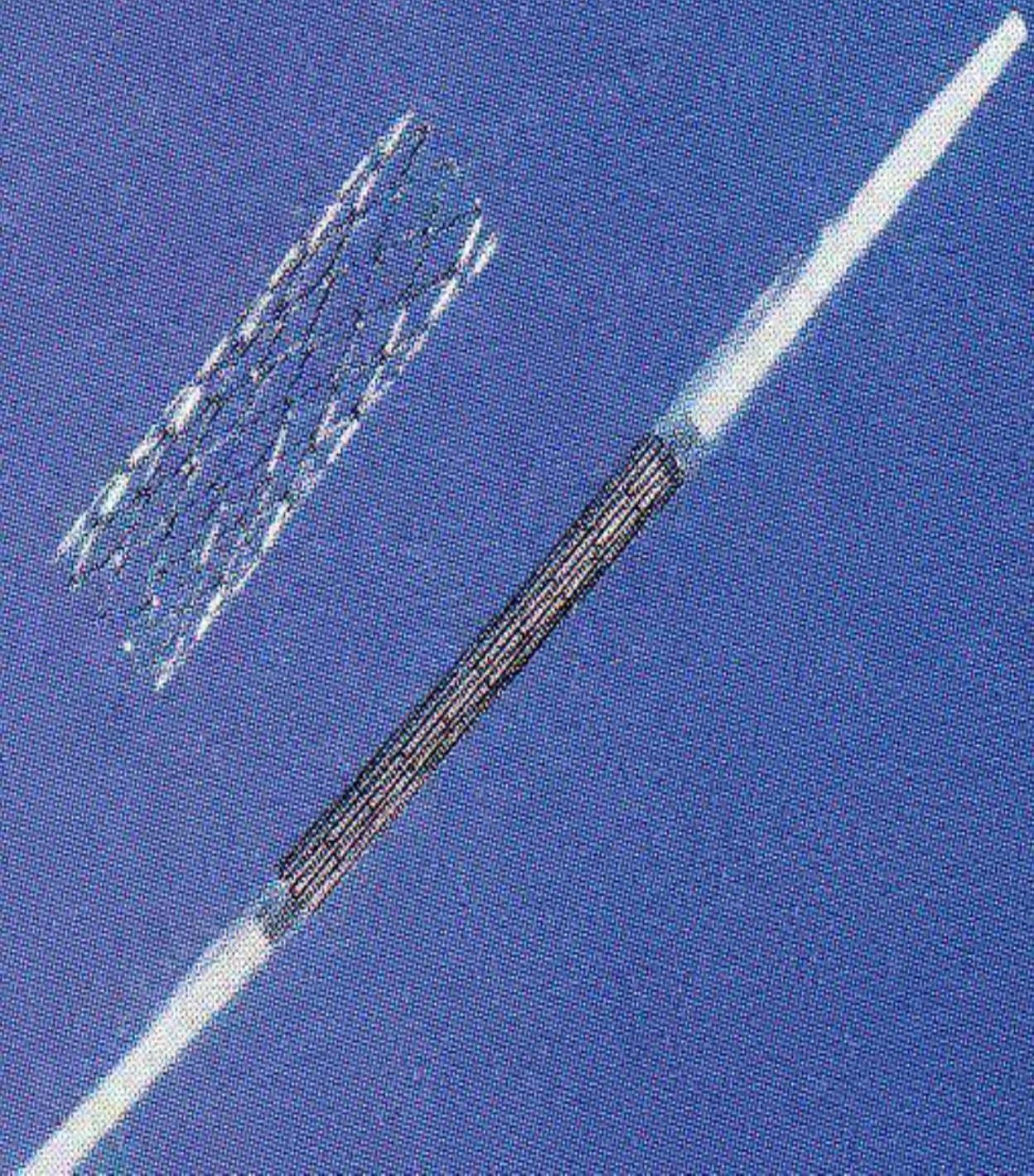
A



B



C



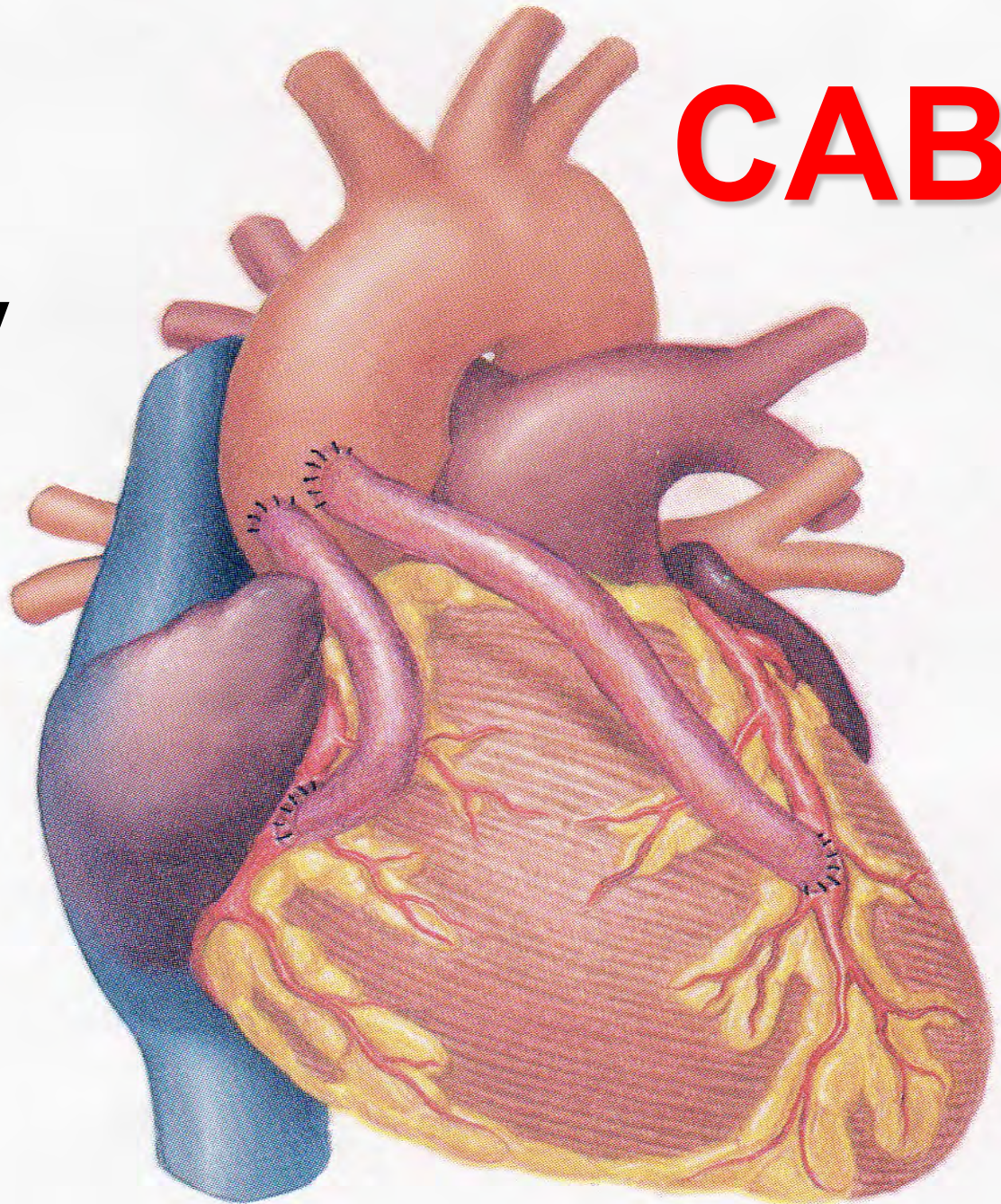
**CABG**

**C**oronary

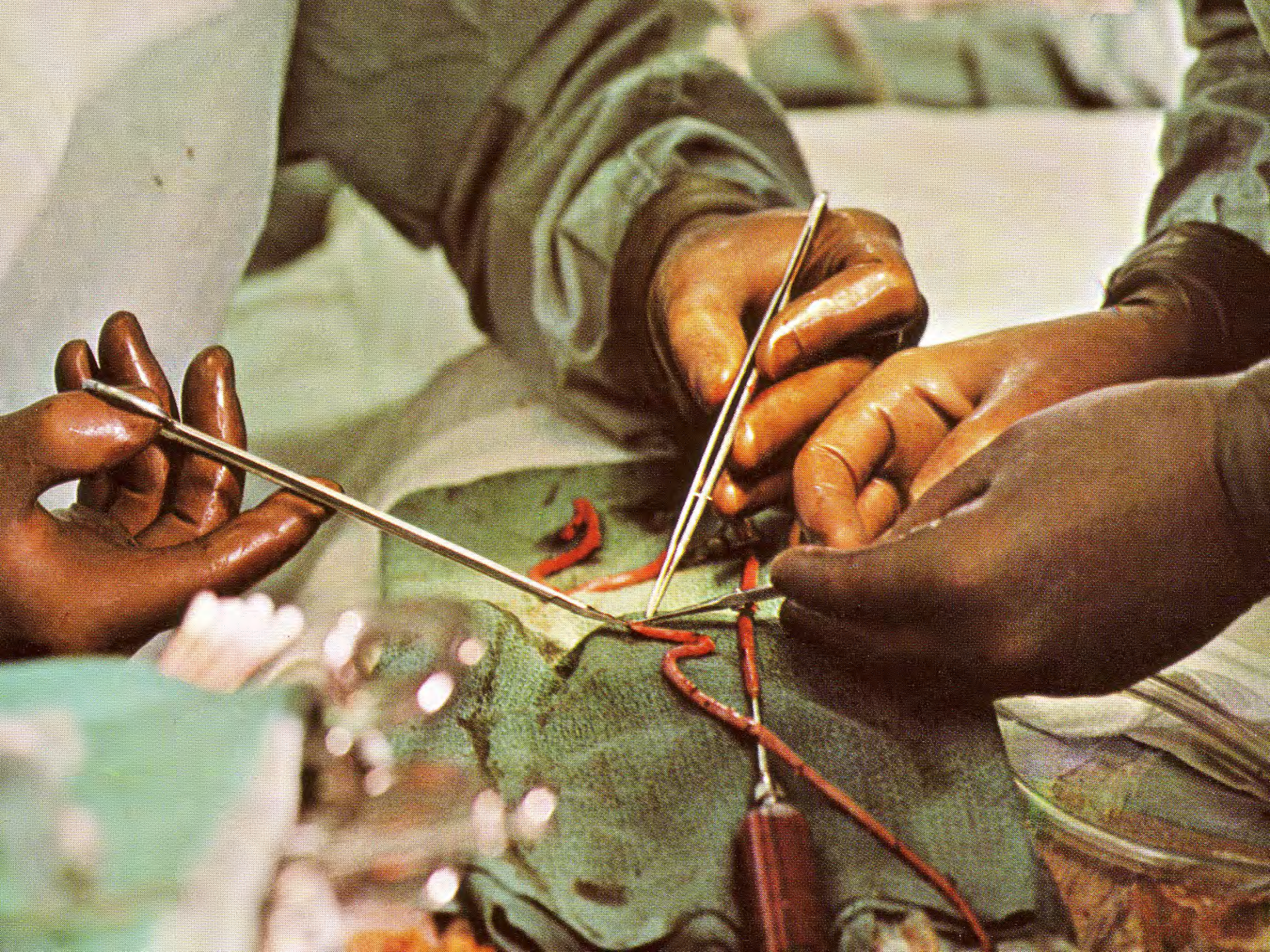
**A**rtery

**B**y-pass

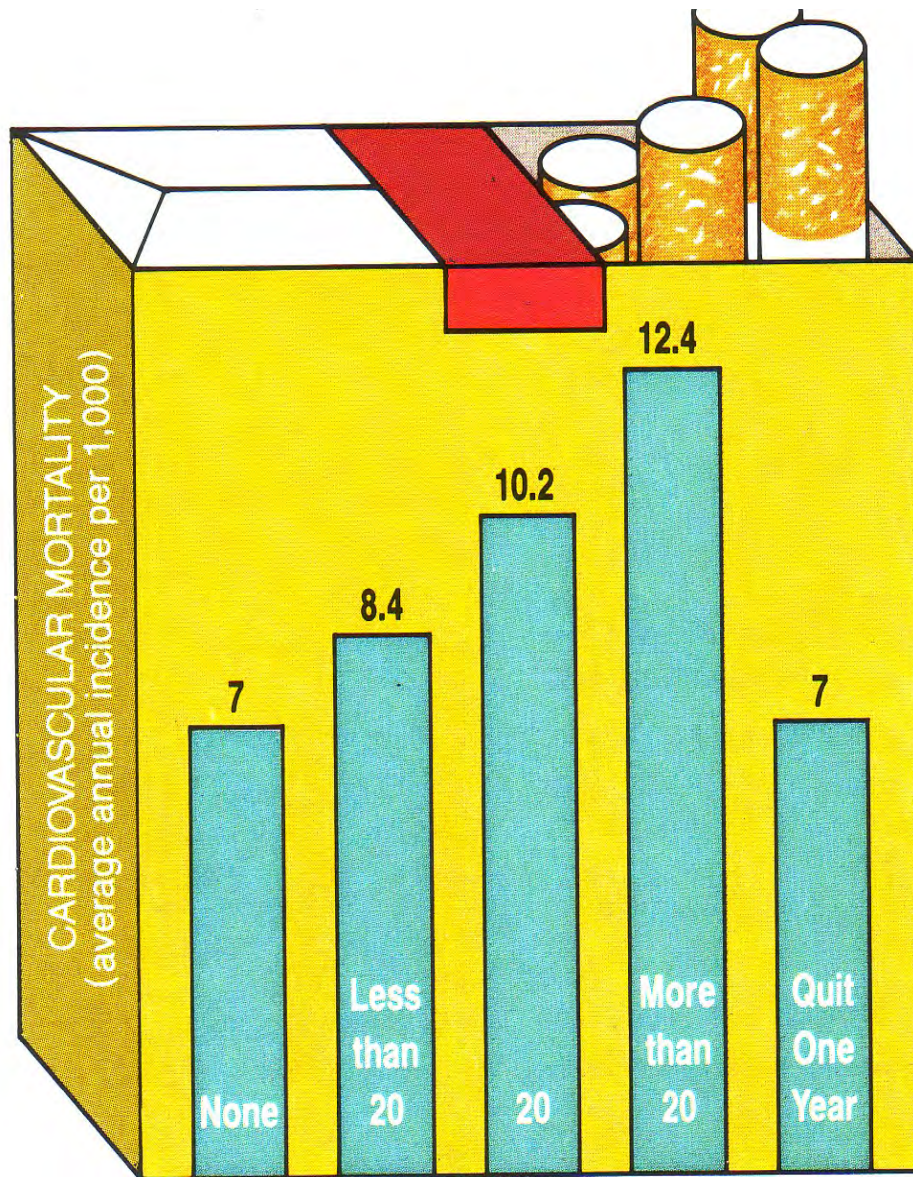
**G**raft











CIGARETTES SMOKED PER DAY

# Tobacco-free Campus

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



UO's Josh Buehler

U.S. Surgeon General  
Regina Benjamin

# 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](http://tobaccofree.uoregon.edu)

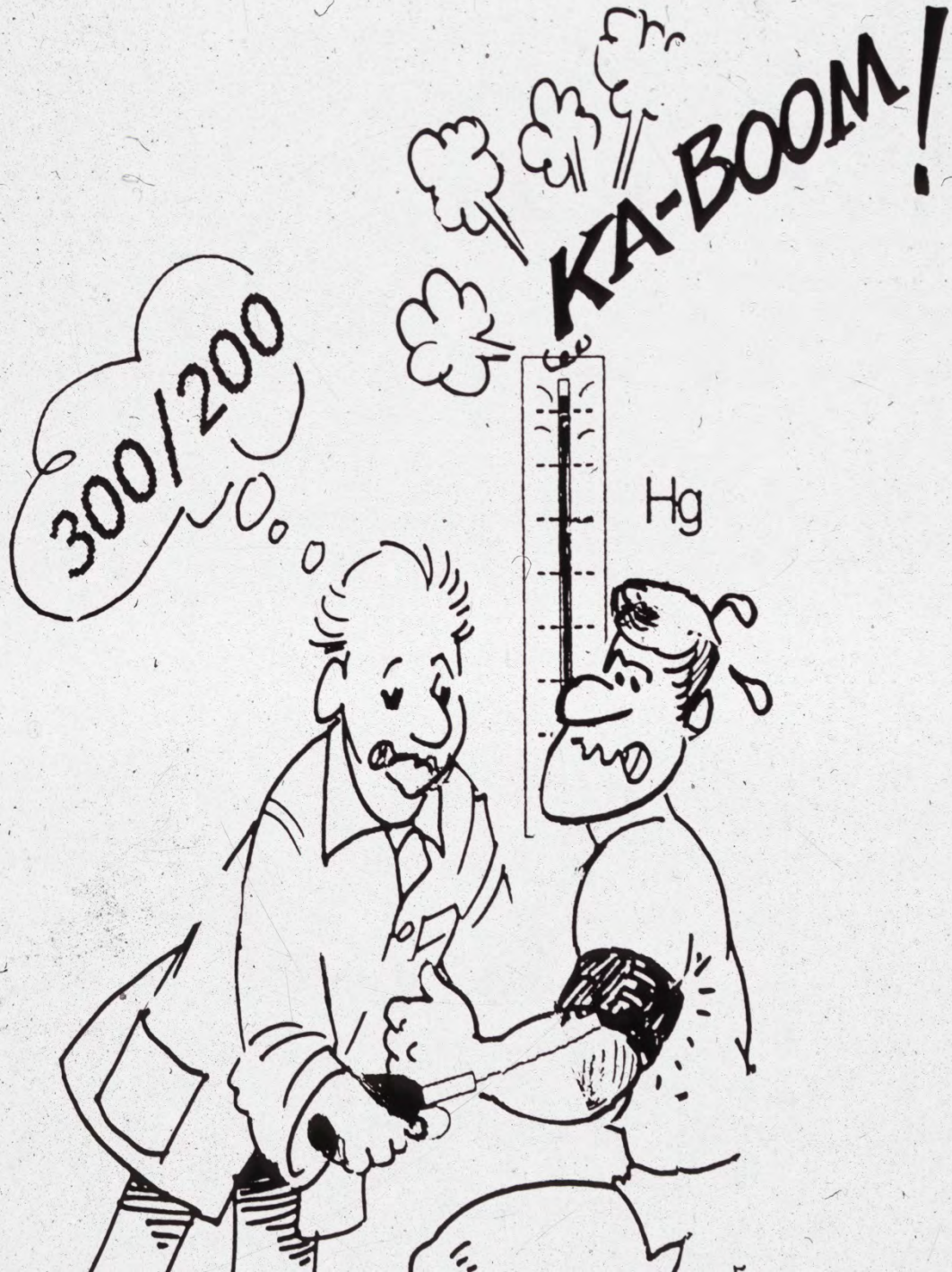


UNIVERSITY OF OREGON

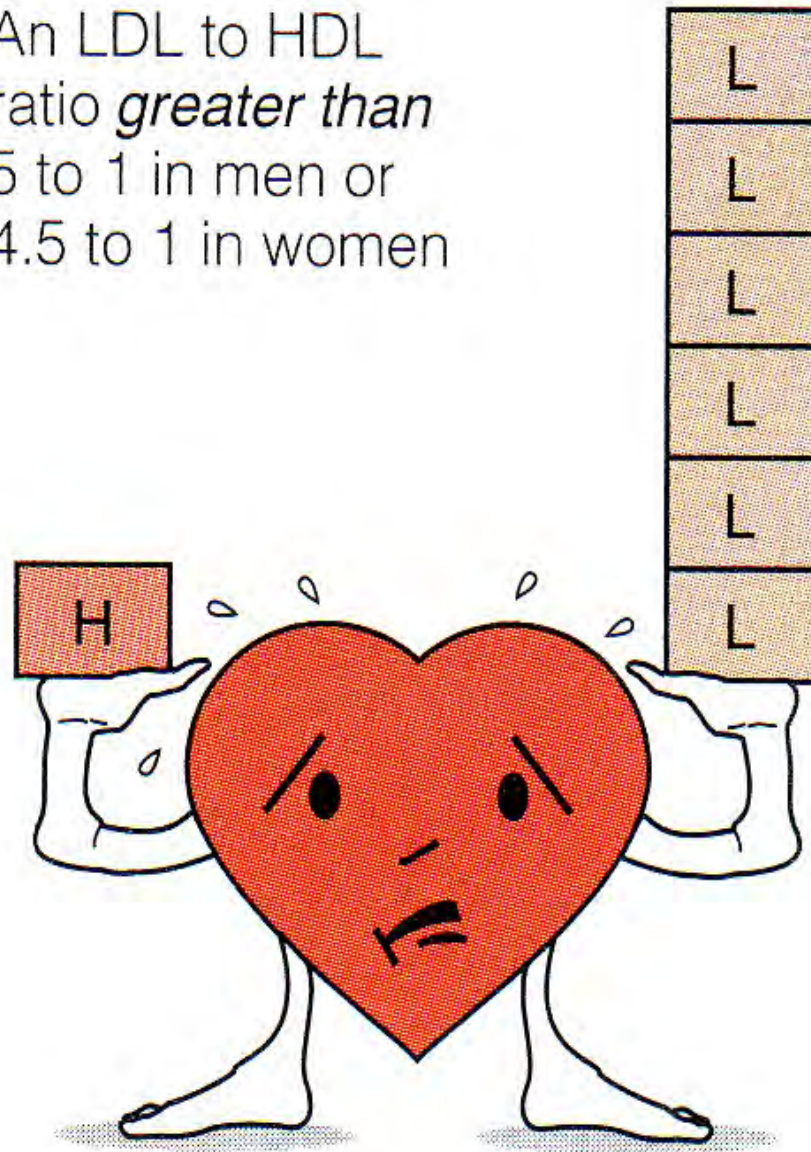
[tobaccofree.uoregon.edu](http://tobaccofree.uoregon.edu)



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

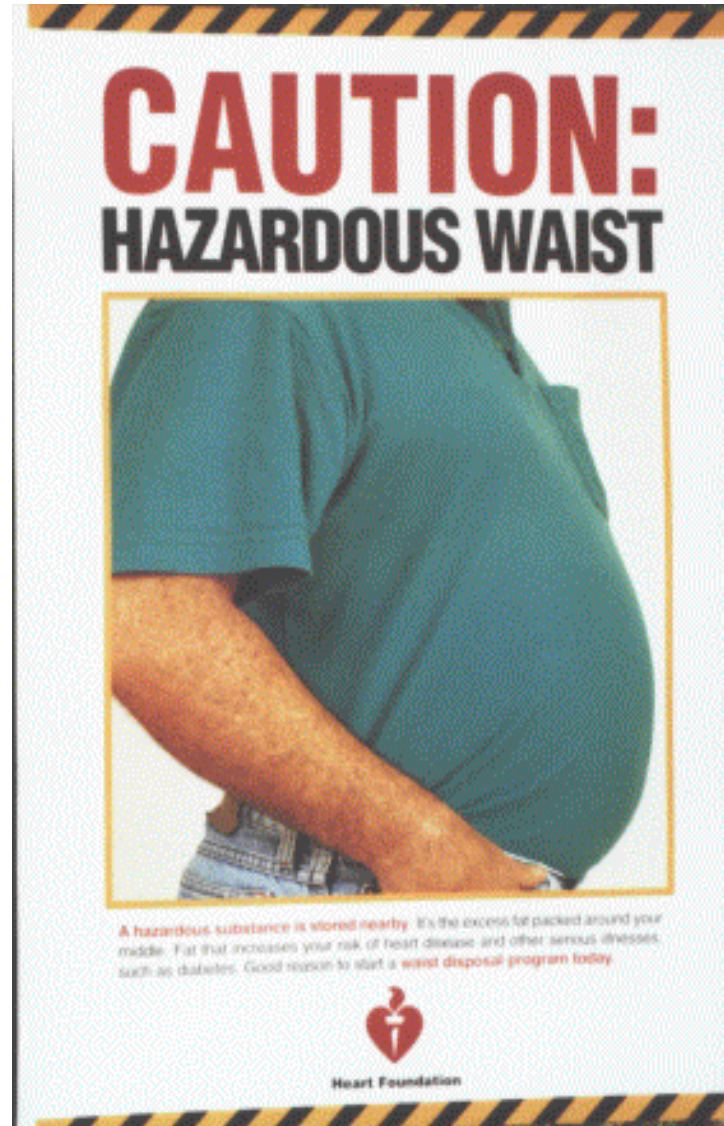


An LDL to HDL  
ratio *greater than*  
5 to 1 in men or  
4.5 to 1 in women




Increased risk of  
heart disease

Those with *apple type* of obesity predisposed to CVD!



**CAUTION:  
HAZARDOUS WAIST**

A hazardous substance is stored nearby. It's the excess fat packed around your middle. Fat that increases your risk of heart disease and other serious illnesses, such as diabetes. Good reason to start a **wast disposal program today.**

  
Heart Foundation



**Cardiorespiratory  
Endurance**



**Muscular  
Strength/Endurance**



**HEALTH-RELATED  
FITNESS**



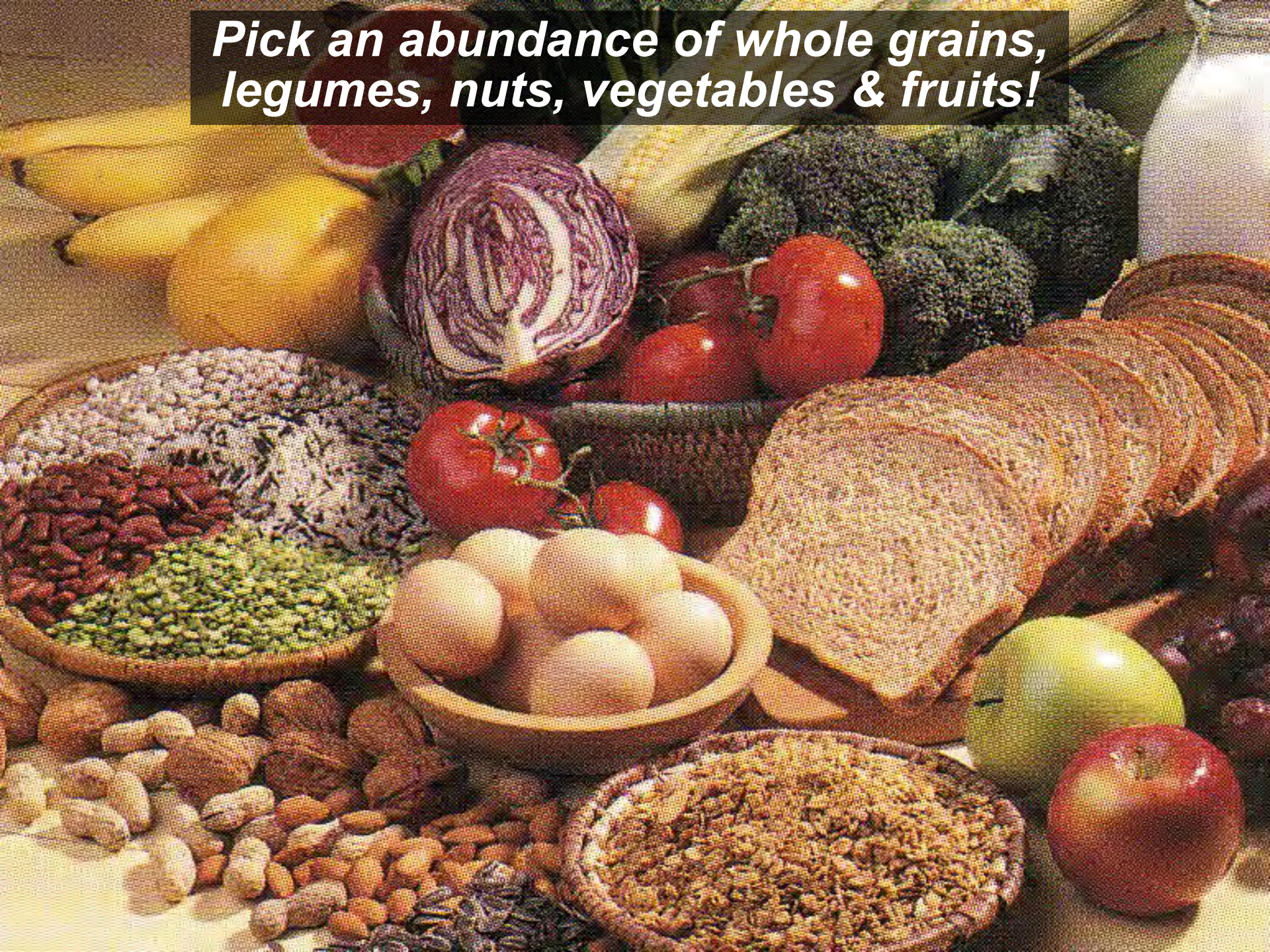
**Flexibility**



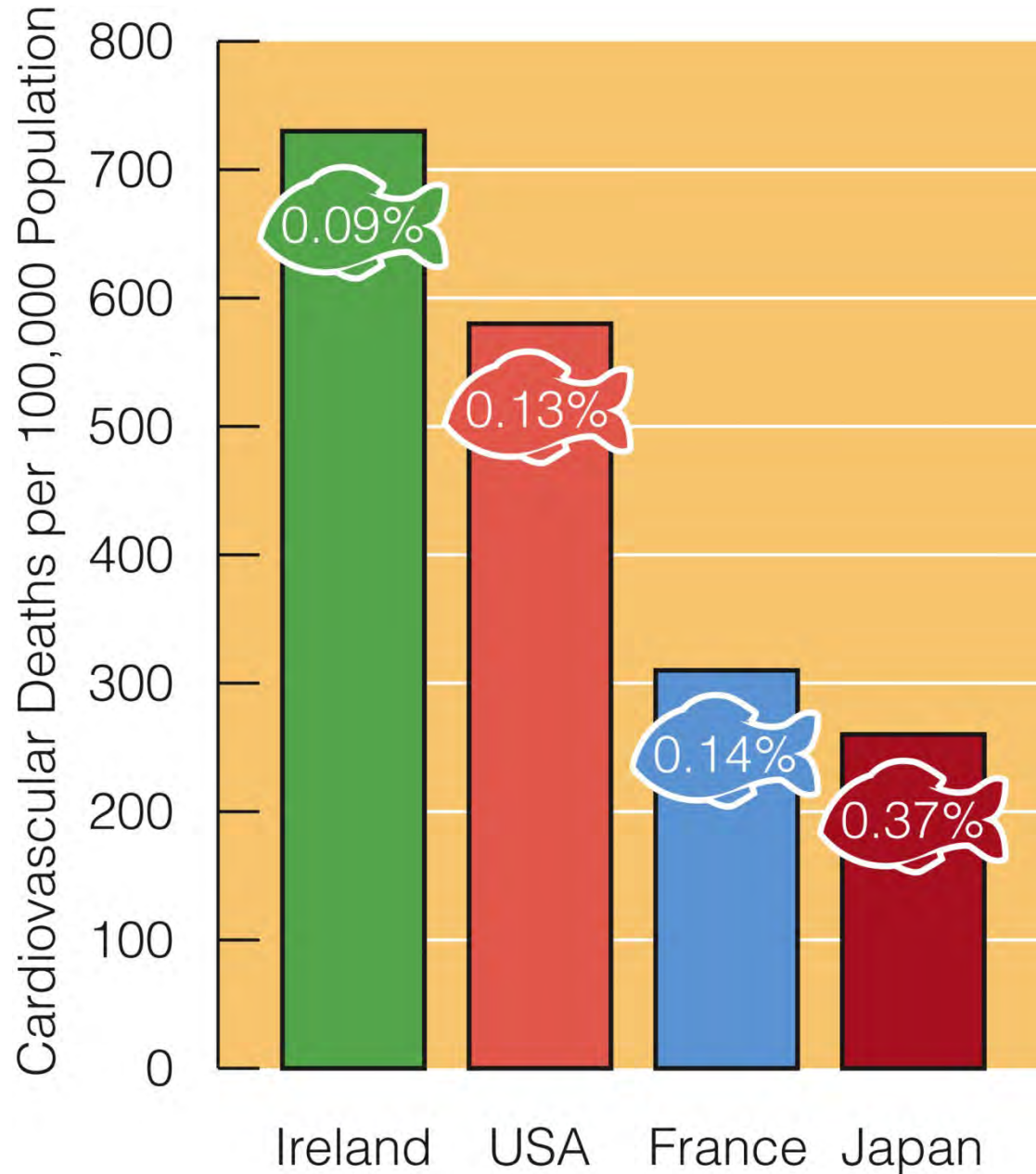
**Neuromuscular Relaxation**



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



# Fish Oil Intakes & Cardiovascular Death Rates





# Healthy Oils to Minimize Atherosclerosis HAPOC?

# H

# A

# P

# O

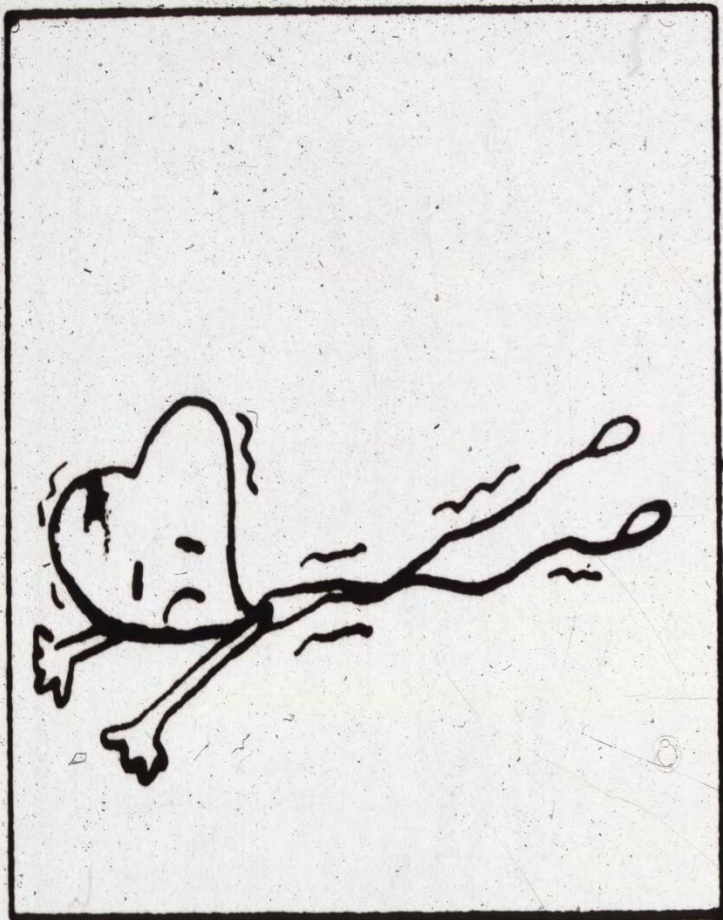
# C



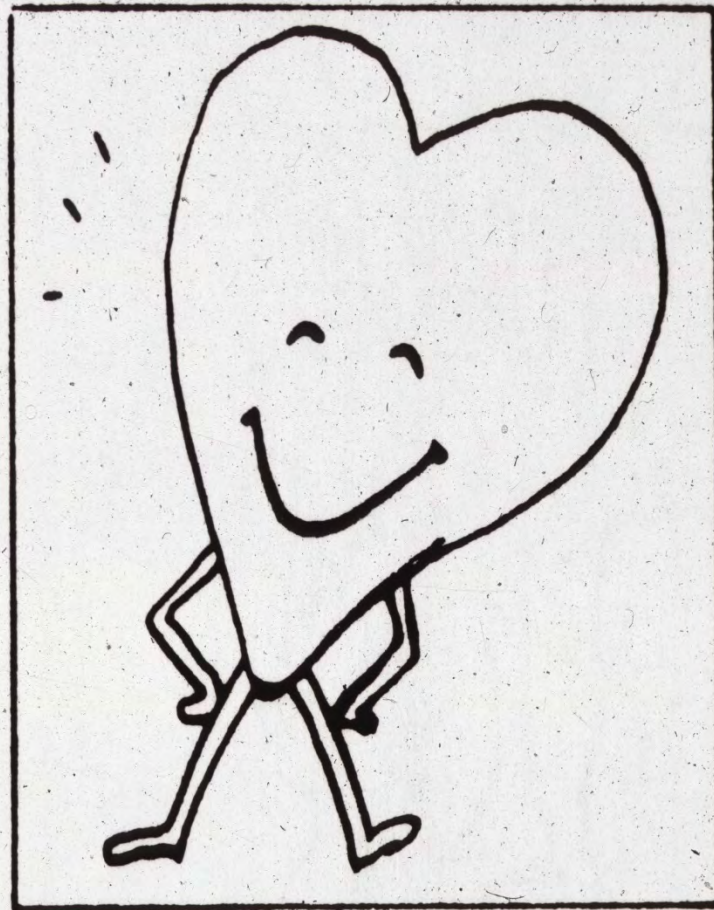


Yes for the  
spinach! — but get  
rid of the pipe!!



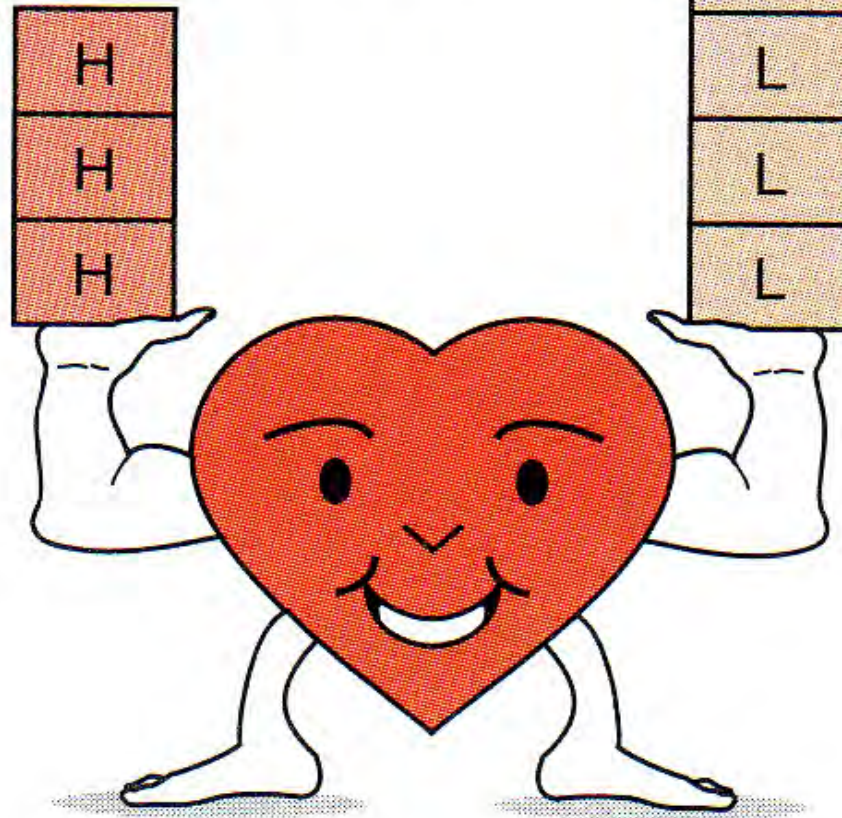


**Before**



**After**

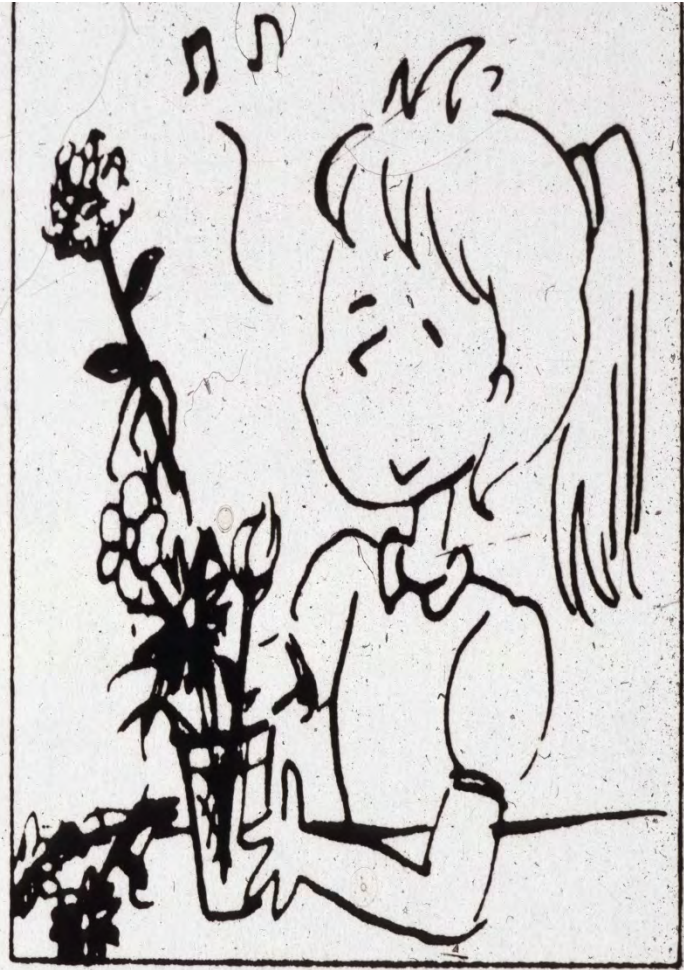
An LDL to HDL  
ratio of *less than*  
5 to 1 in men or  
4.5 to 1 in women



Reduced risk of  
heart disease

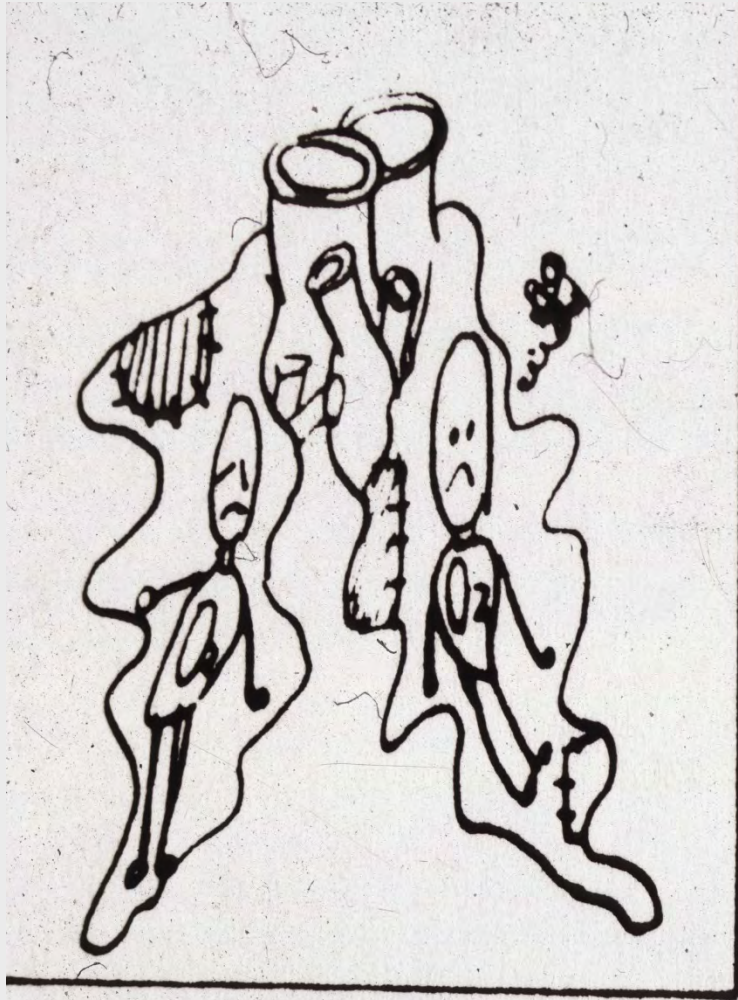


Before

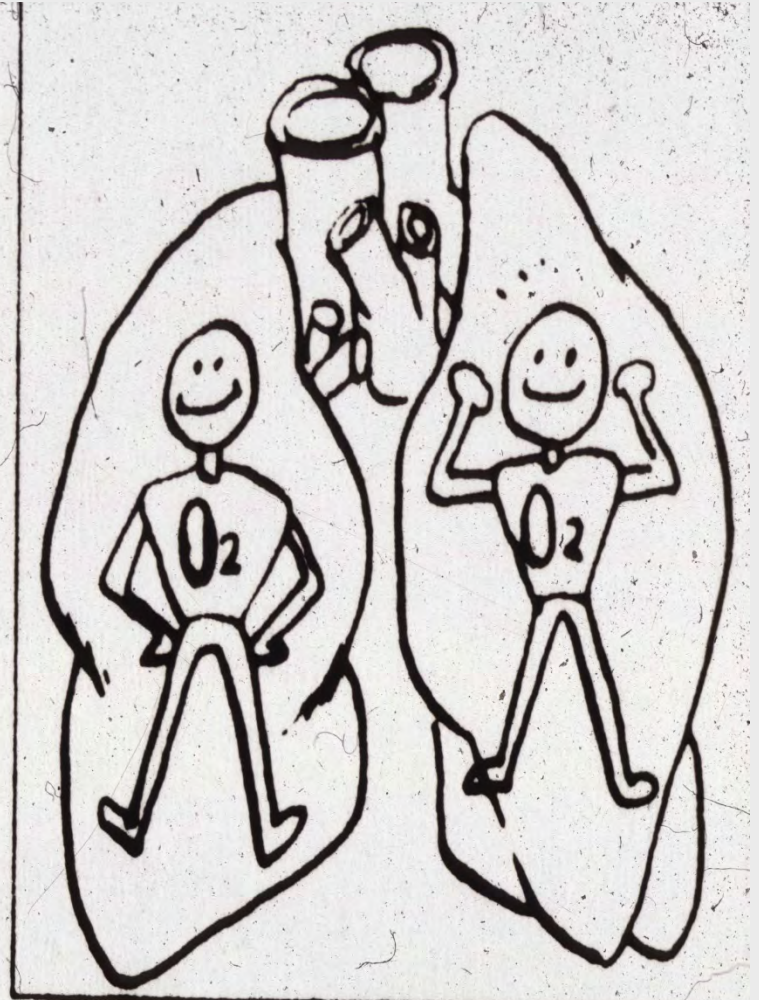


After





**Before**



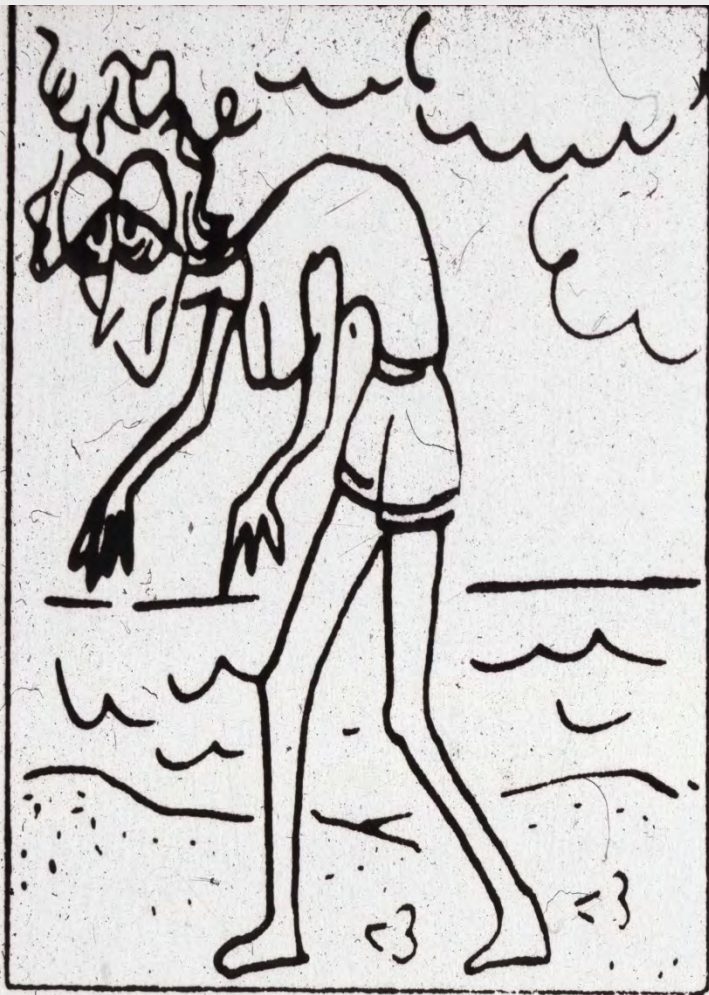
**After**



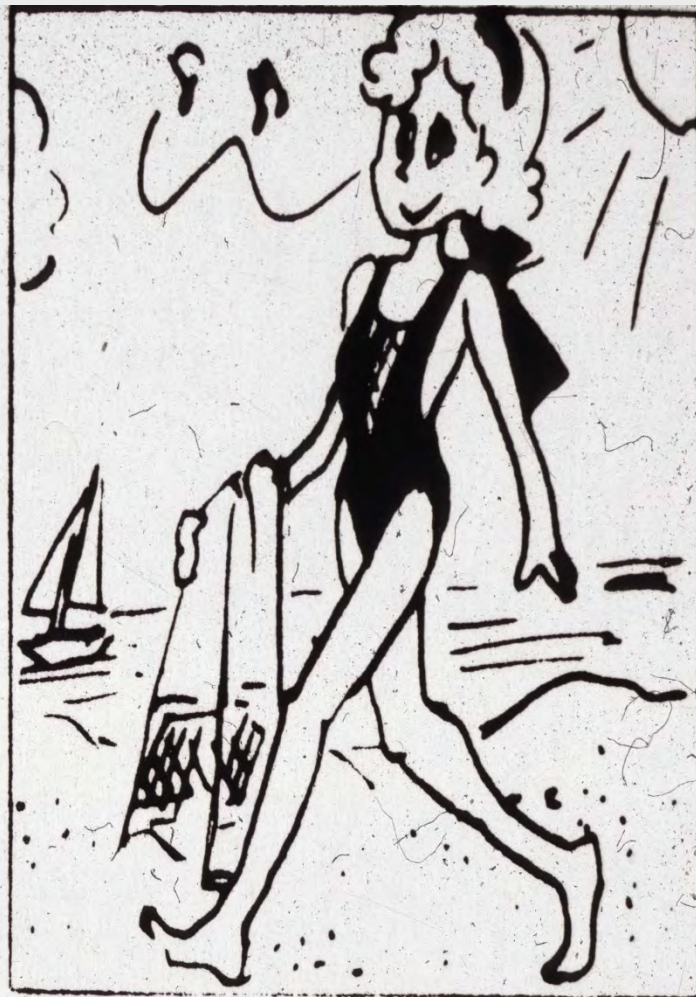
Before



After



**Before**



**After**