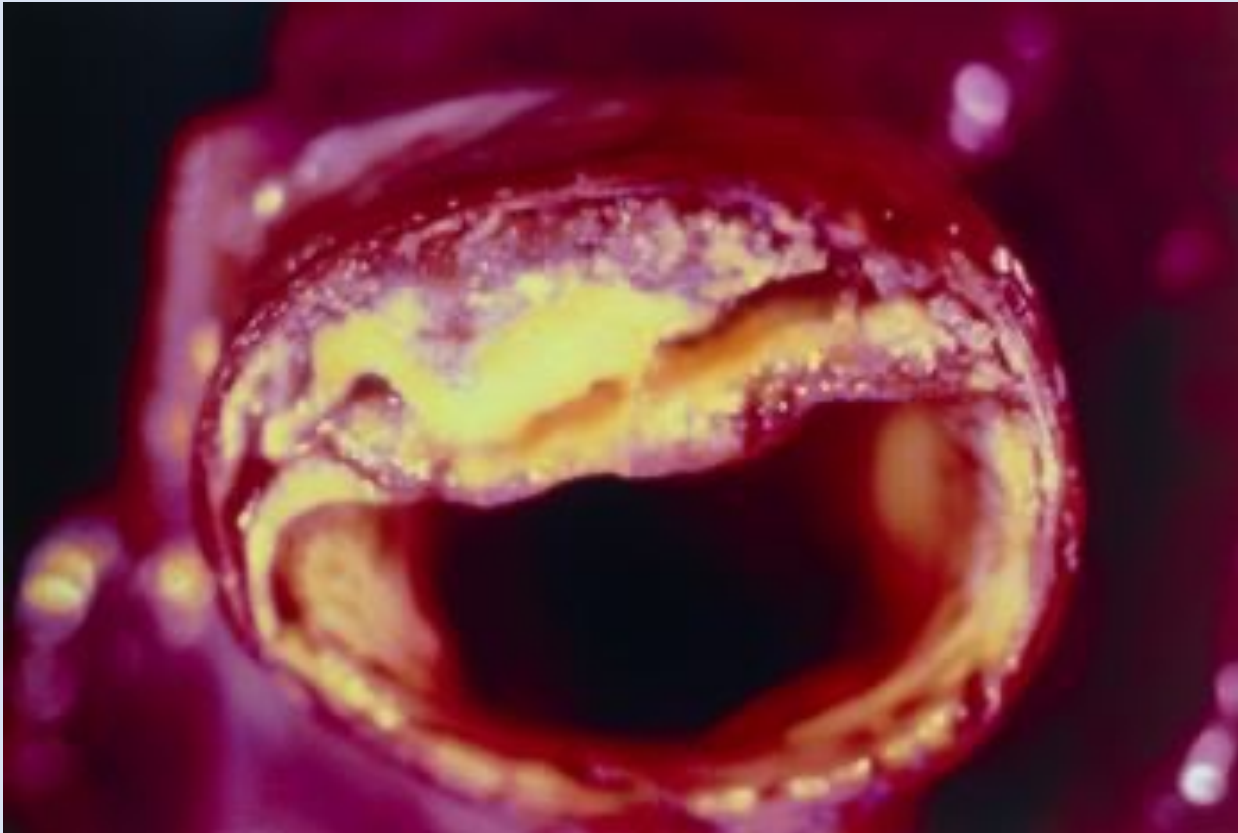


# The critical role of Family Physicians in preventing heart disease with coronary calcium CT and simple targeted lipid management.



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School of Medicine

**Questions?**

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# Case Presentation



- 70 y/o married female in good health
- Active, preparing to run a 10 mile race for seniors
- Grandfather died of massive heart attack @ 61
- Never smoked, A1C=5.8%, no hypertension, BMI = 22
- LDL chol 110 mg/dl, TG = 88 mg/dl
- Coronary artery calcium score = 196
- Medications – vitamins and supplements only



# Case Presentation

What do you recommend as the *Next* step ?

- A. No additional therapy necessary ?
- B. Start on a Mediterranean diet ?
- C. Measure LP(a) and hsCRP ?
- D. Start her on baby aspirin therapy ?
- E. Start therapy with a low chol diet, a statin and ezetimibe ?

# Who Gets a Heart Attack ?







## Question

How many people  
do you know who  
have had a heart  
attack outside of  
medicine ?

Probably 100



In **2020**, **42,000** women died of breast cancer in the United States.

In contrast, **314,000** women died of heart disease.

In other words, a woman is seven times more likely to die of a heart attack than from breast cancer.

**Ratio 7 : 1**





**A common scene in New Mexico  
7,000/yr. (# of EMS calls for cardiac arrest) or one every hour**





**Question**  
**When was the  
Epidemic of  
Atherosclerosis first  
identified ?**

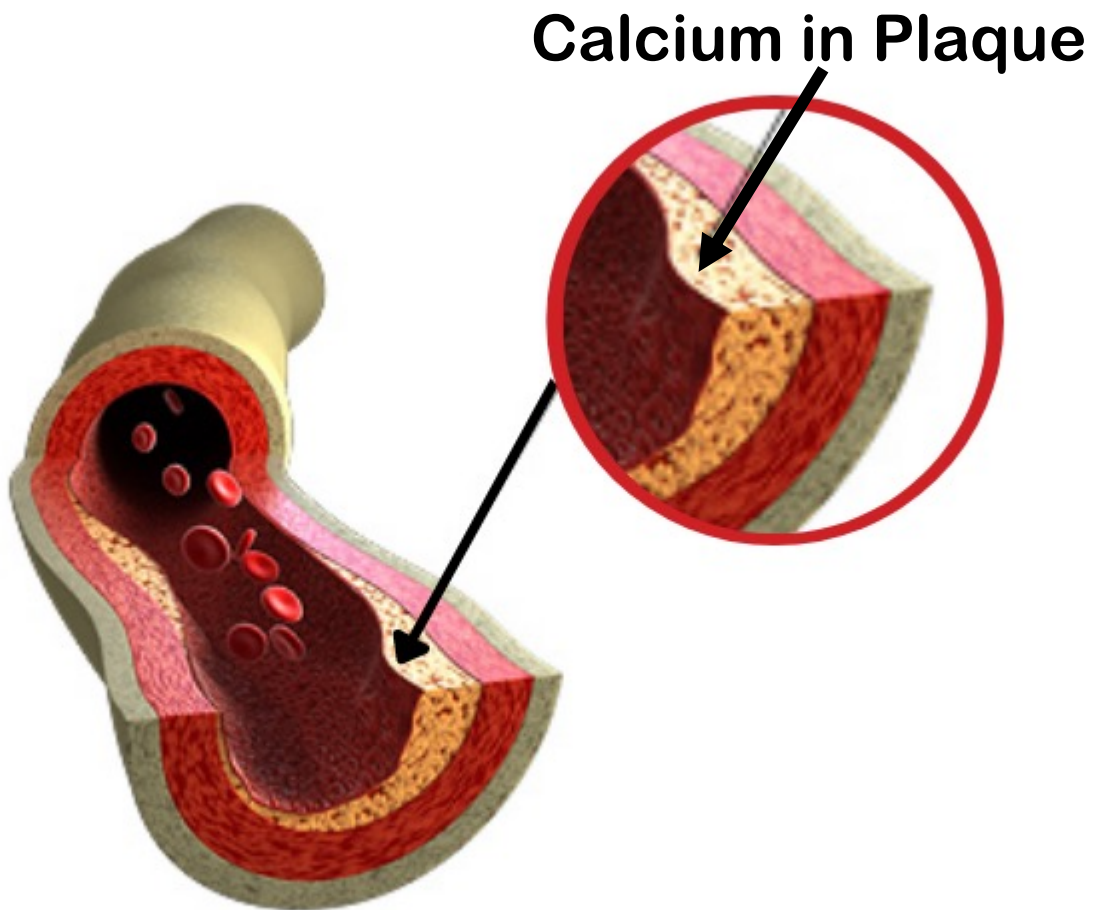






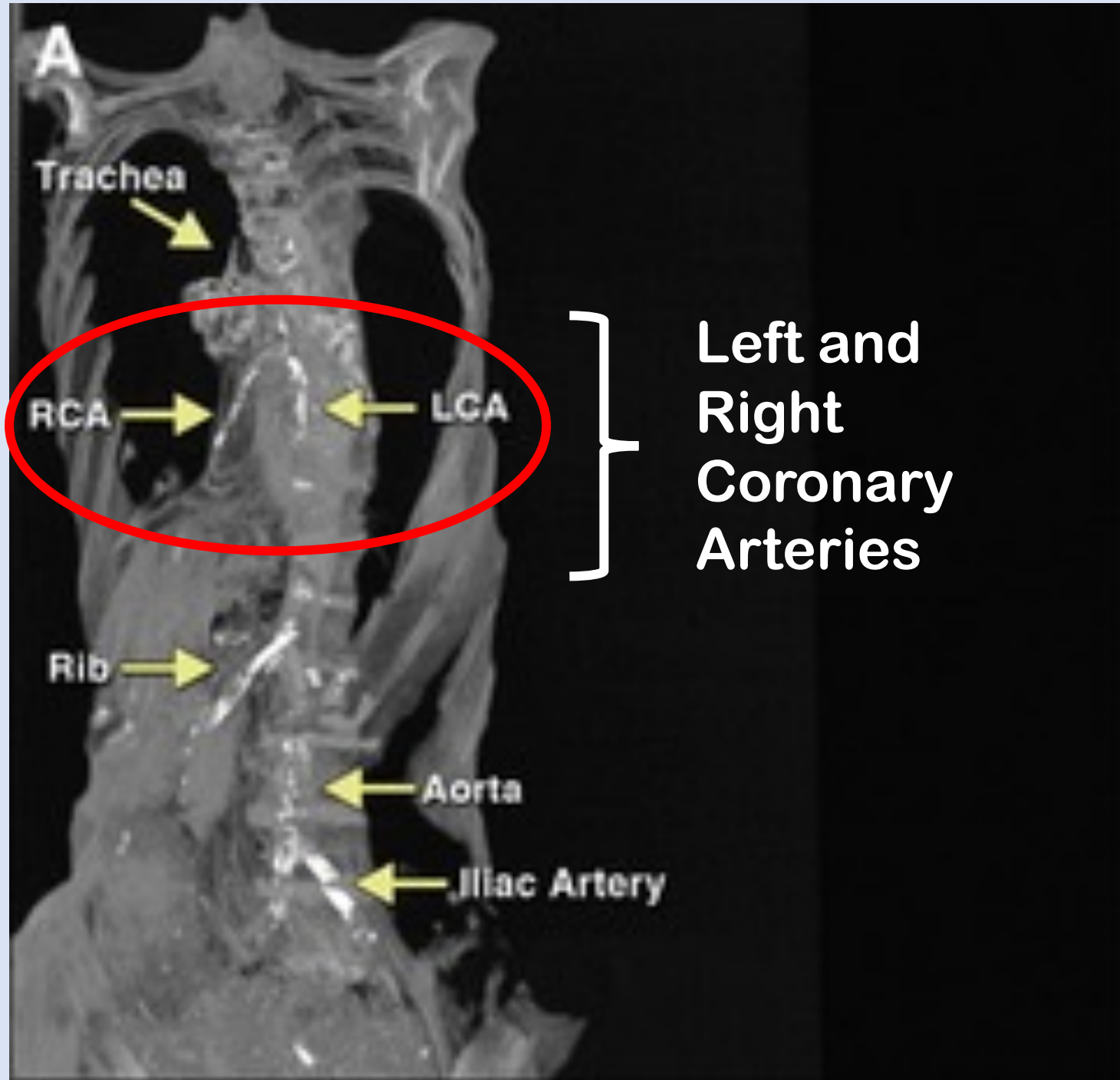


**Egyptologist Gomma Abd el-Maksoud of the Cairo Museum prepares to do a CT scan of a mummy who was known as Scribe Haitay from the New Kingdom, 18th Dynasty, 1550-1295 B.C. Haitay was a 45-50-year-old man who was found to have extensive evidence of vascular disease. The mummy was found wrapped in linen and reeds.**



**Where there is calcium, there is plaque**





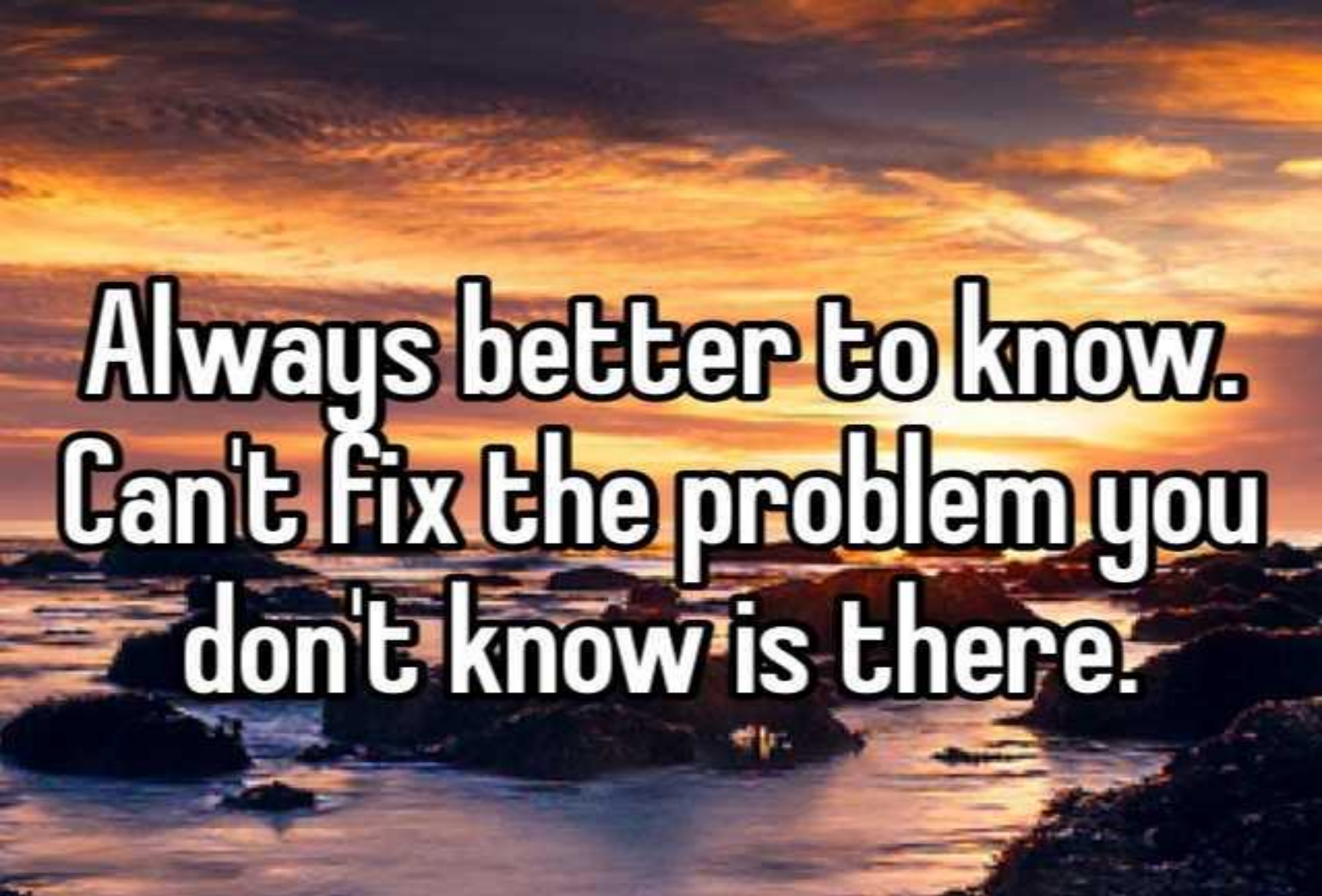


## Question

What is best way to  
prevent a heart  
attack ?

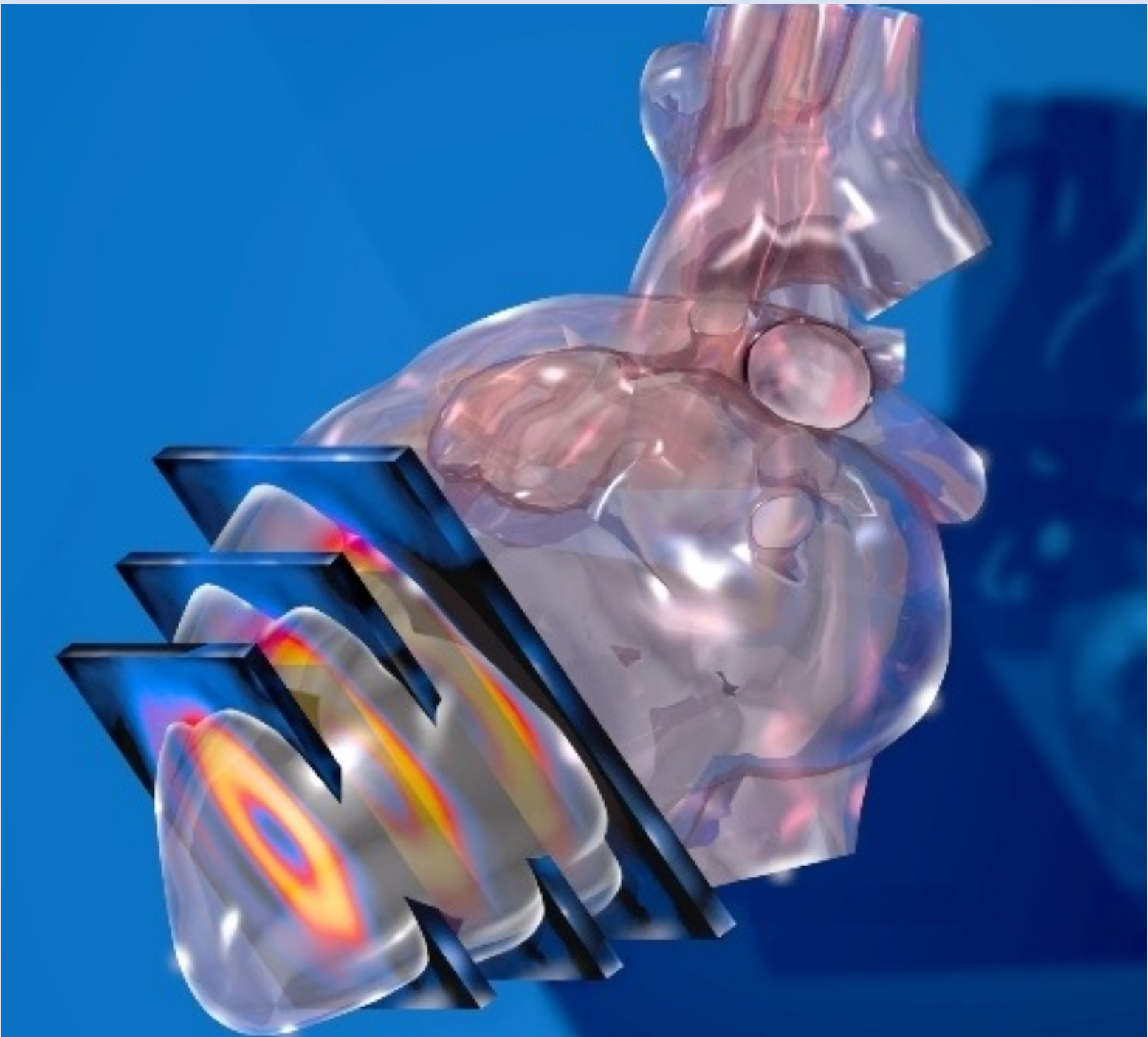
“Heart mammogram”

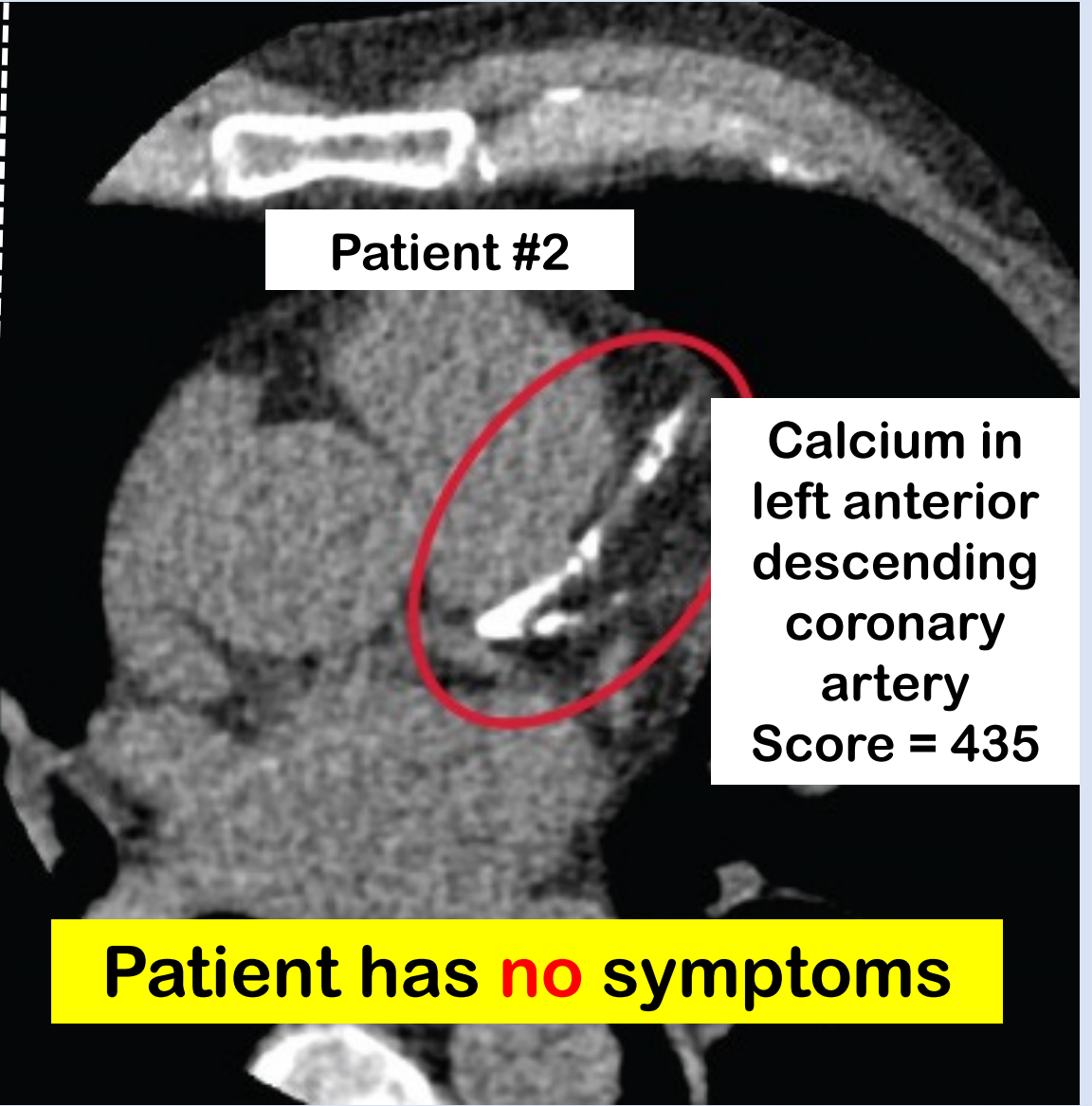
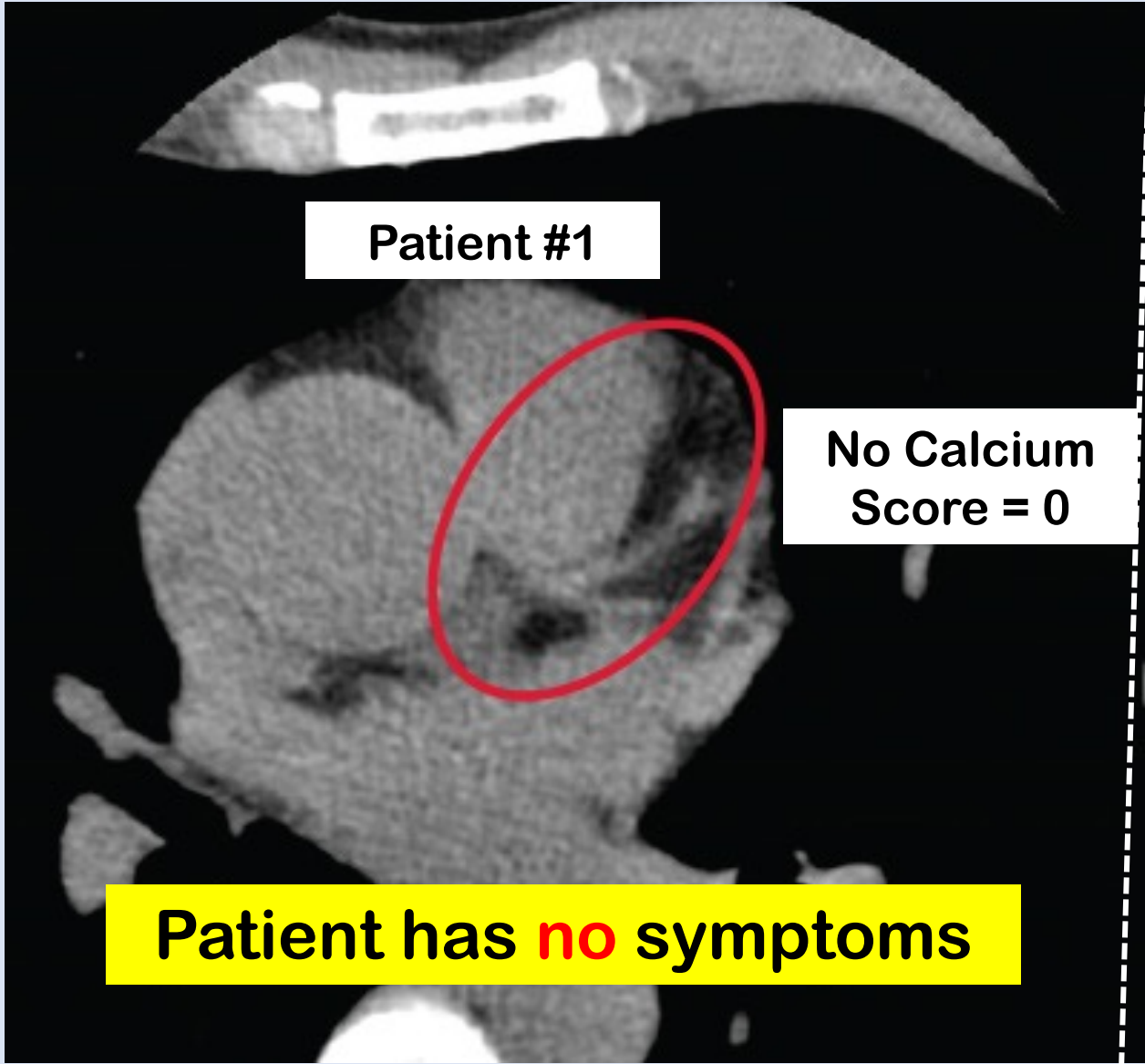
Calcium Heart Scan

A photograph of a sunset over a rocky coastline. The sky is filled with orange and yellow clouds, and the sun is low on the horizon. The water is calm, reflecting the colors of the sky. Several dark, jagged rocks are scattered in the water and along the shore. The text is overlaid in the center of the image.

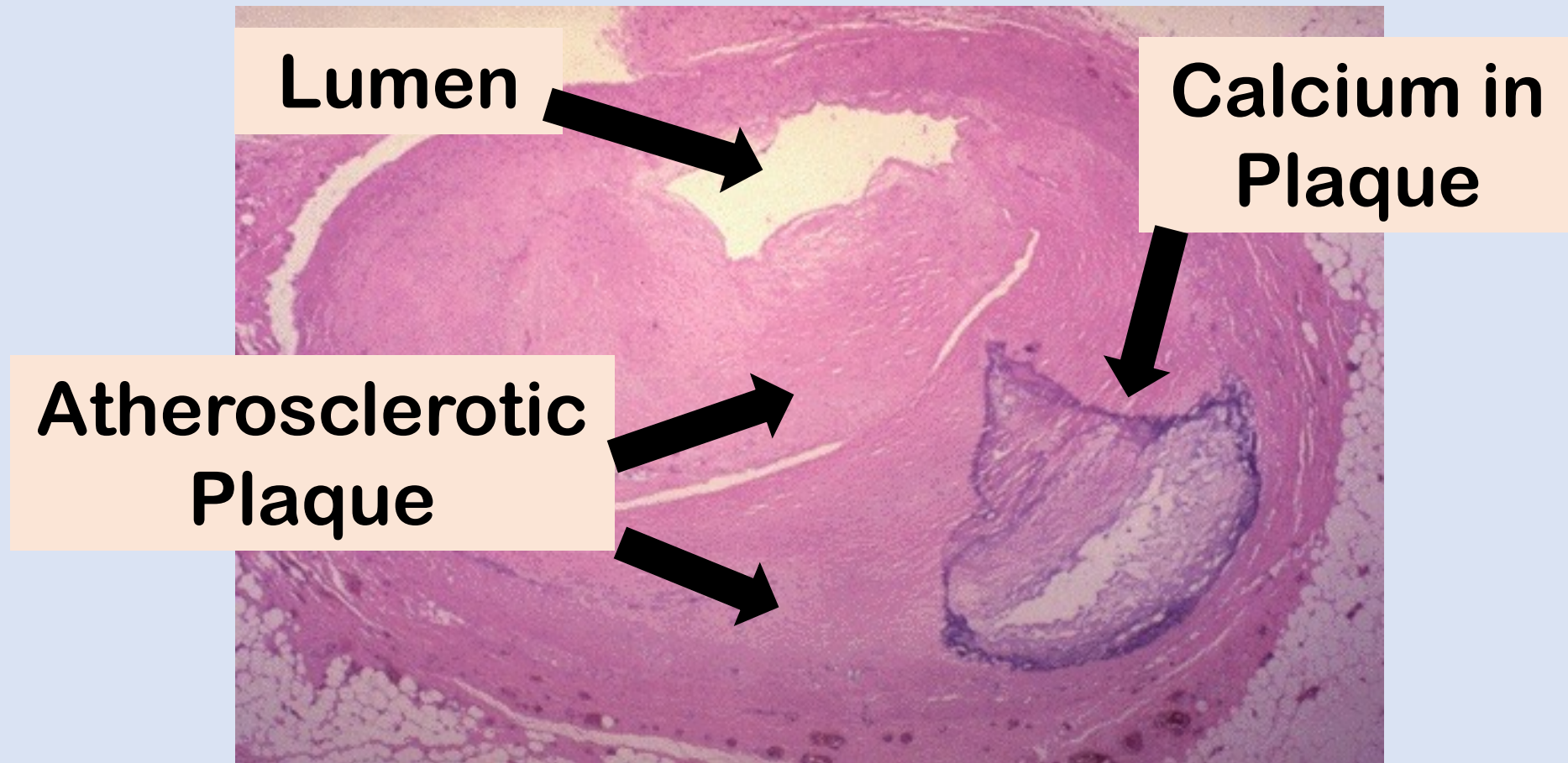
**Always better to know.  
Can't fix the problem you  
don't know is there.**







# Coronary Artery with Plaque and Calcium



The CT calcium scan “sees” this calcium and quantifies the amount

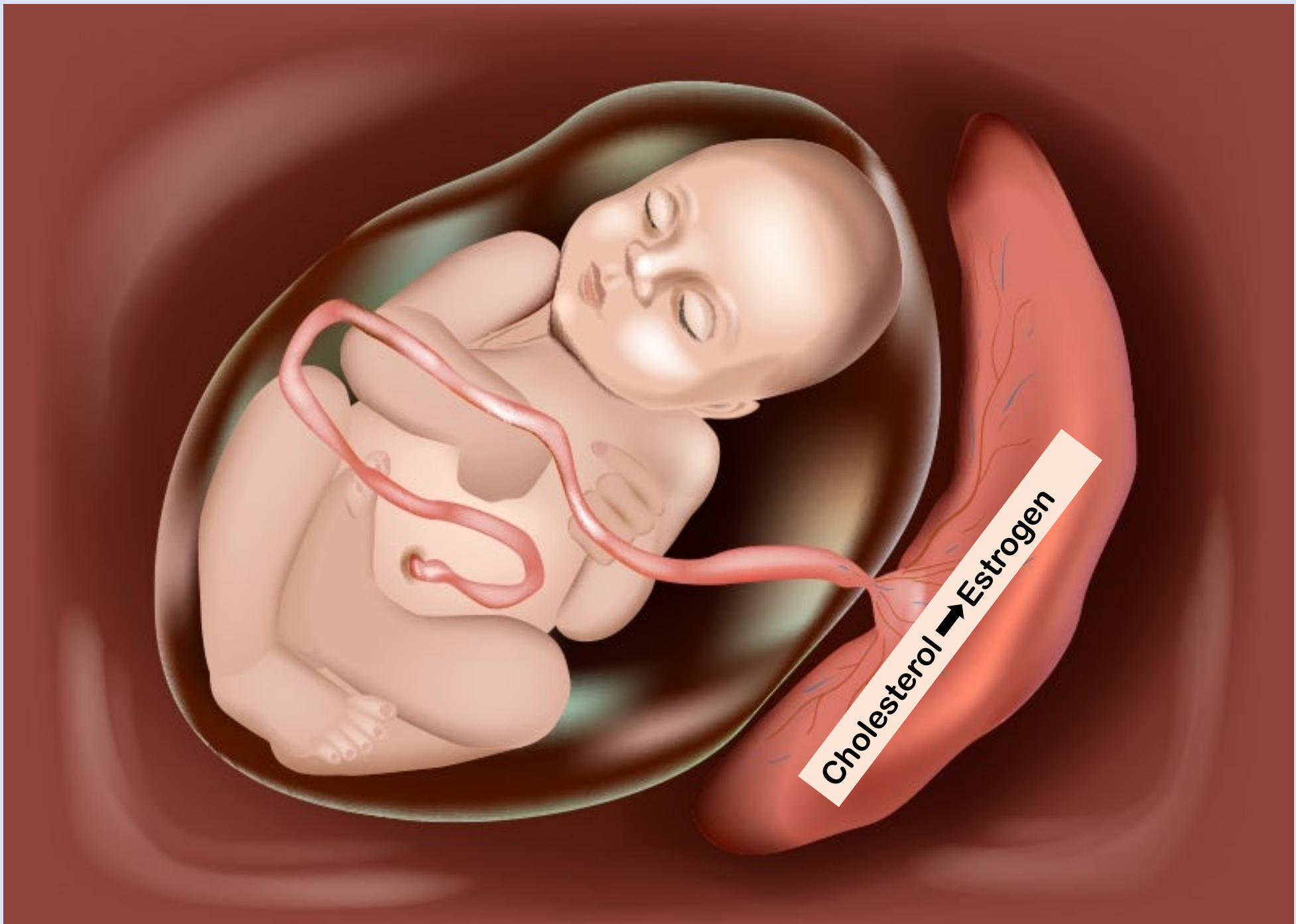




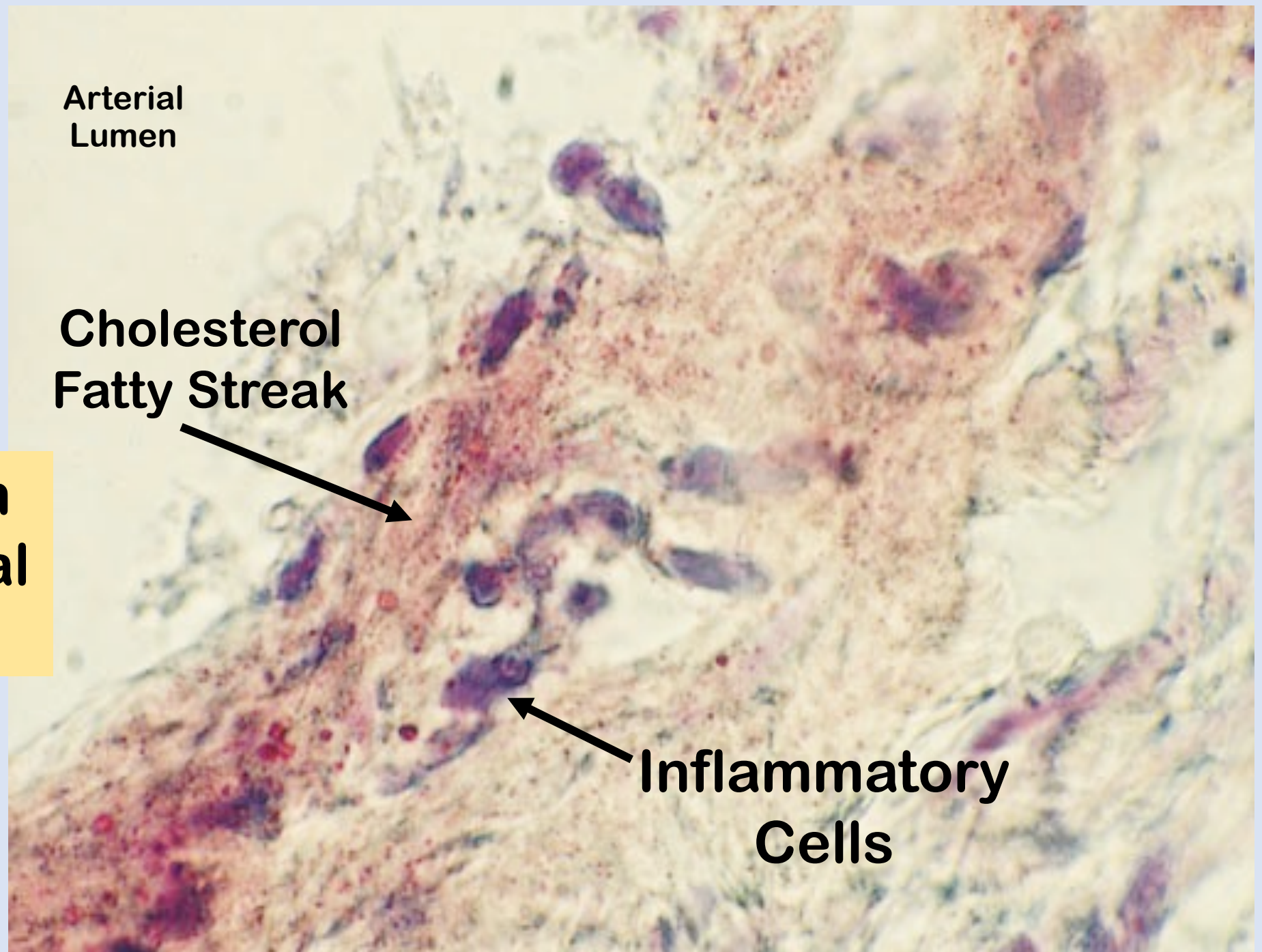
**Question**  
**What is the Optimal  
LDL cholesterol for  
Everyone?**

**The  
placenta  
needs  
cholesterol  
from the  
liver to  
make  
estrogens**

**Only time  
LDL is  
useful**



**Fatty streak in  
the human fetal  
artery**



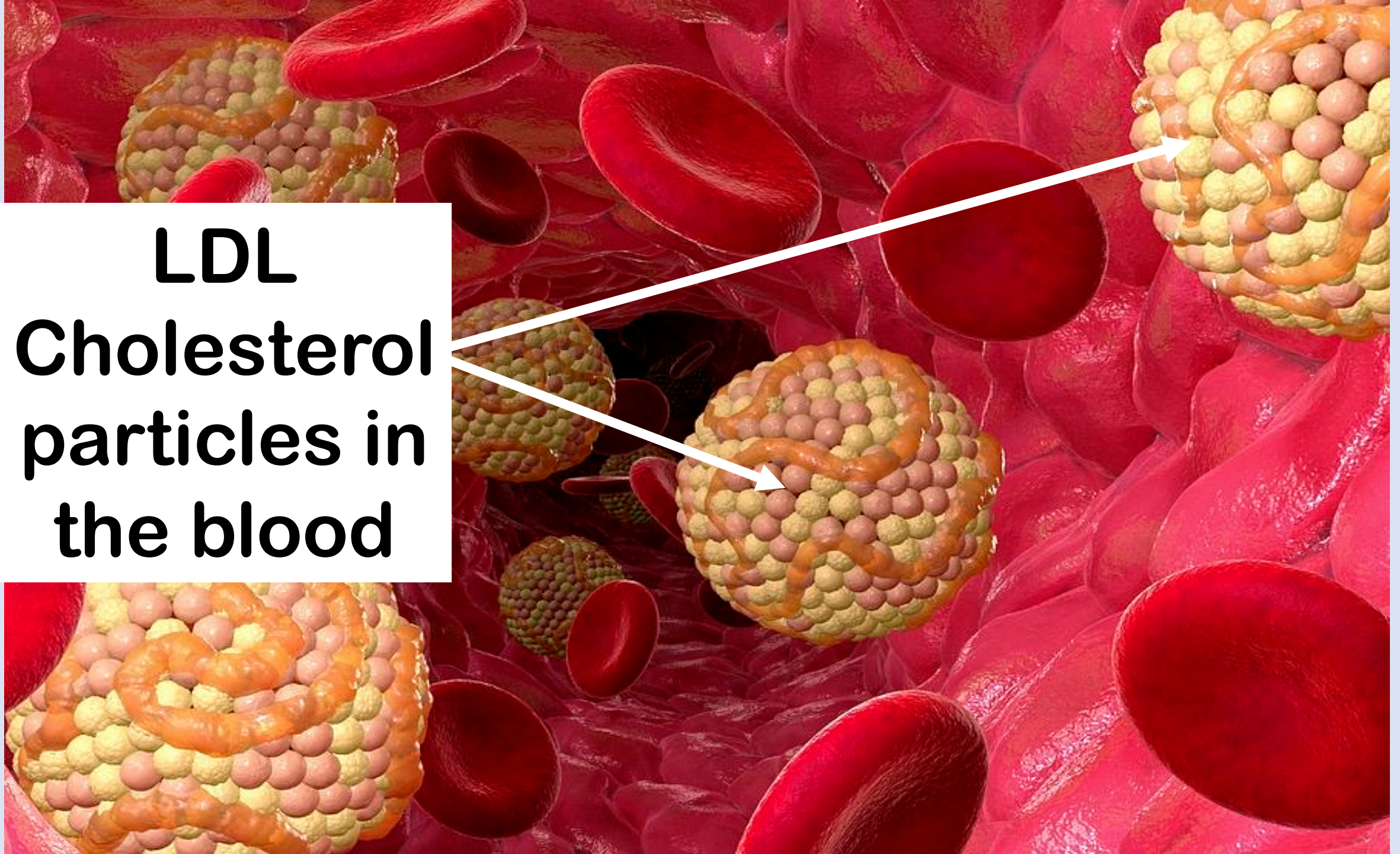




**Remember When ? LDL = 50 mg/dl**



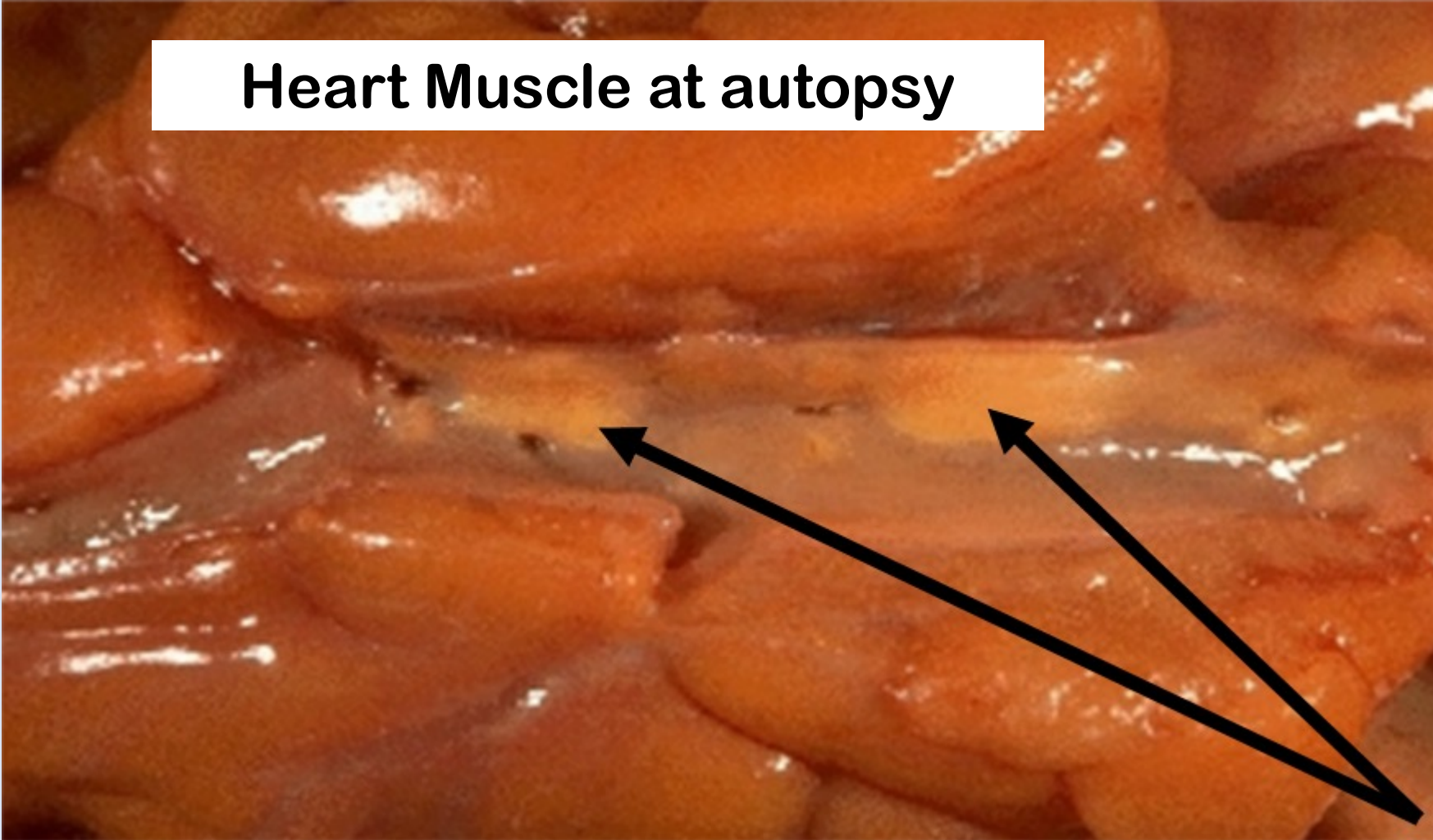




**LDL  
Cholesterol  
particles in  
the blood**



## Heart Muscle at autopsy



Fatty cholesterol streaks in the coronary artery = beginning plaques

# Atherosclerosis



Atherosclerosis is a diffuse disease and usually occurs simultaneously in many places

# LDL cholesterol blood levels

Average US  
Non-obese  
Population

Goal of  
Rx



CVD Events Increasing



CVD Events Decreasing



110

90

70

50

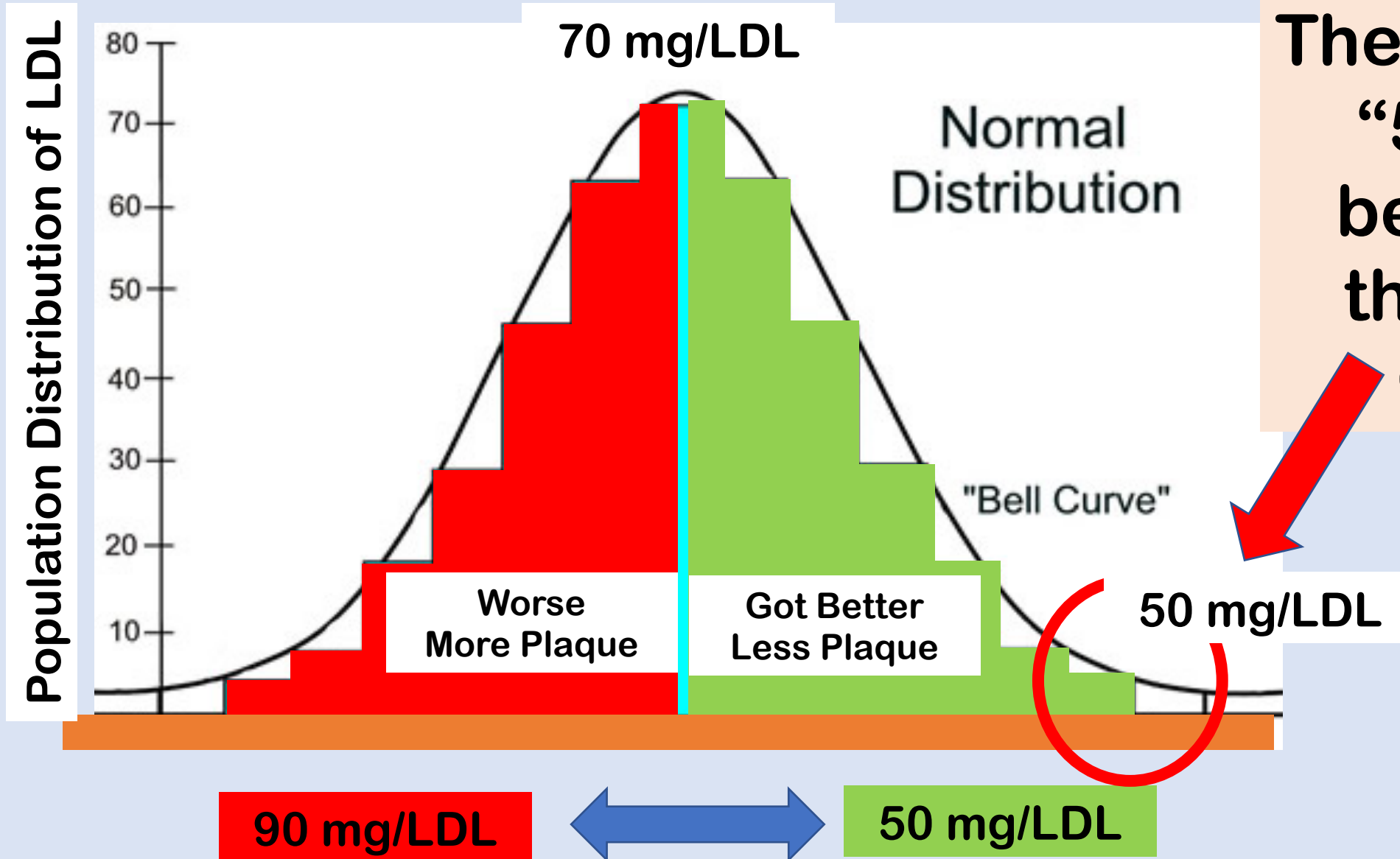
30

LDL cholesterol mg/dl



At an LDL of 70 mg/dl, half the patients get better, half get worse

The Reason  
“50” or  
below is  
the LDL  
Goal





Eugene Braunwald, MD  
Preeminent Cardiologist

## LDL

**“The goal should be less than 50 mg/dl.” declared Dr. Braunwald, who added “anything above 50 mg/dl is toxic”**

**Ref. Clinical Endocrinology News Oct., 2016, p16.**



## Question

How much does  
a coronary  
calcium CT  
cost?



# ***How Much Money Is Your Life Worth?***



**\$150 ?**

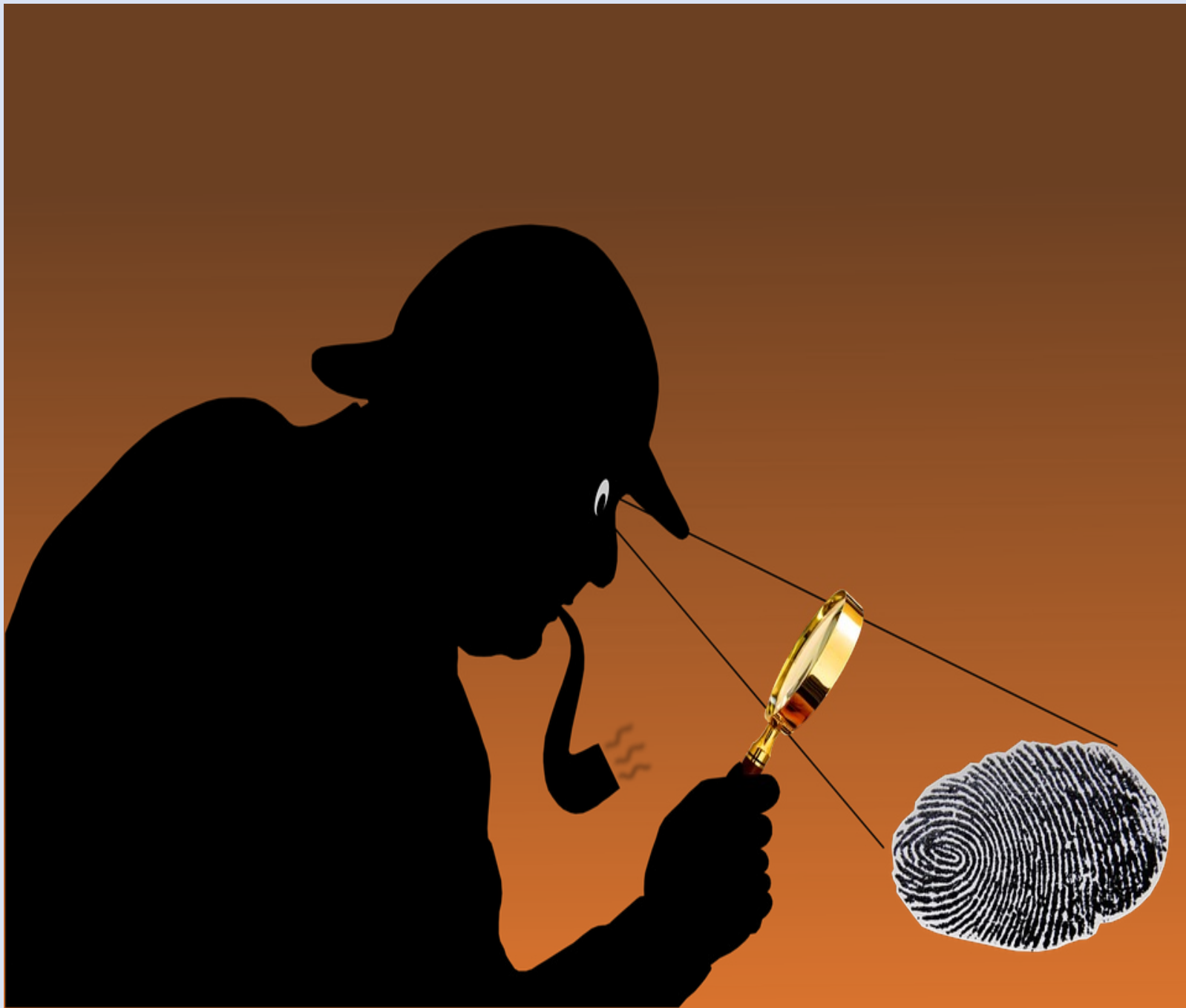


For the cost of one heart attack  
(\$100,000), you could treat one patient  
with a calcium heart scan and  
preventive medication  
(30 cents/day) for 1,000 years



**Note** – if  
you have  
health  
insurance  
with a 10%  
co-pay, you  
will be  
billed by the  
hospital  
\$10,000





**Is there any  
proof that  
Heart Attacks  
can be  
prevented?**



**Our Busy Clinics at University Hospital**



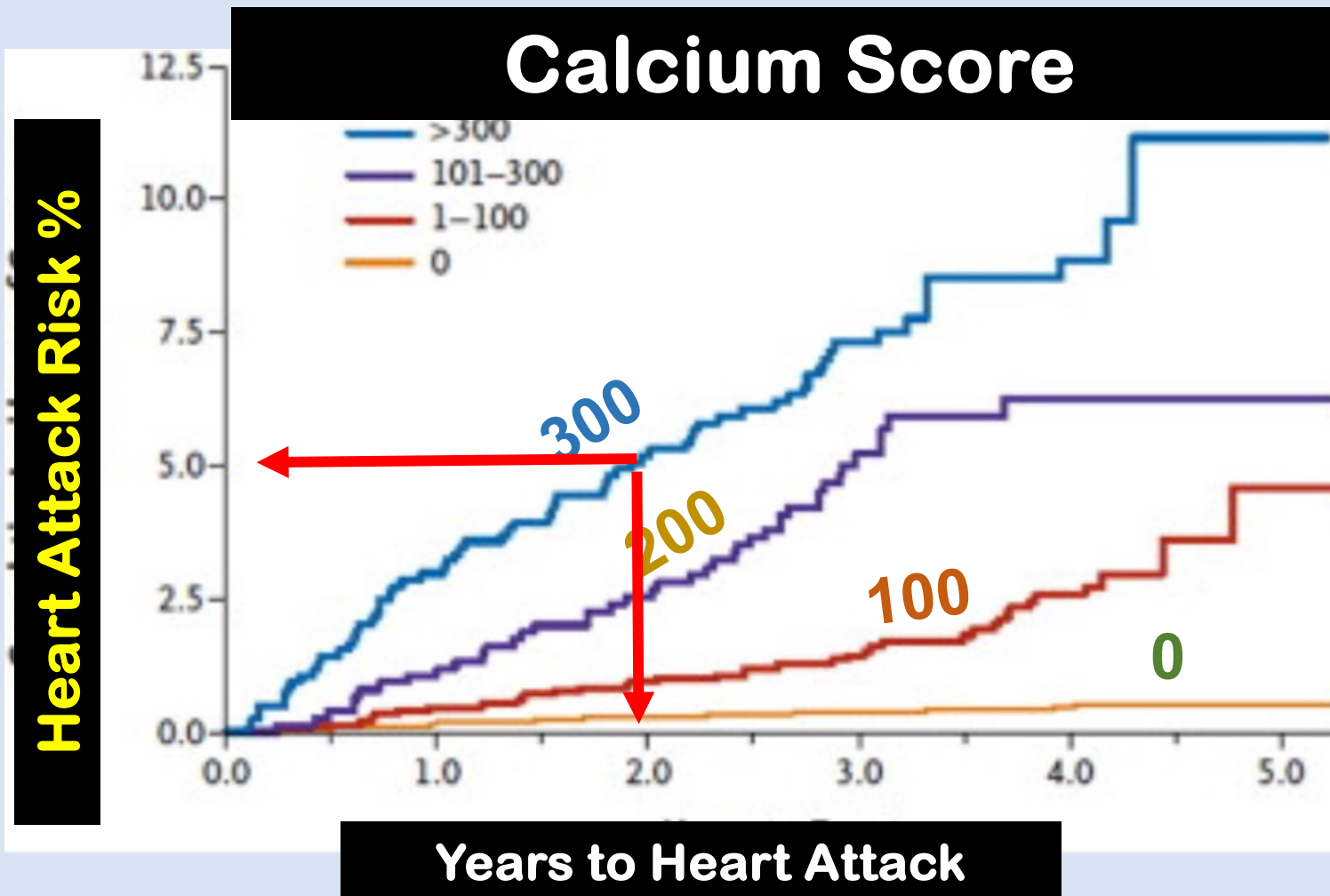
**140 adults with + coronary artery  
calcium scans observed over 5 years**



**20 adults did not  
want to take any  
pills**

**120 adults  
agreed to take 2  
pills / day**





These data permit prediction of future heart attacks over five years

## Association Between Coronary Calcification and Events

Unadjusted survival curves for incident coronary events according to the coronary calcium score in the MESA (Multi-Ethnic Study of Atherosclerosis) study.

from Detrano et al.

## # Heart Attacks over 5 Years

# of Heart Attacks

12  
10  
8  
6  
4  
2  
0

Observed

2

Predicted

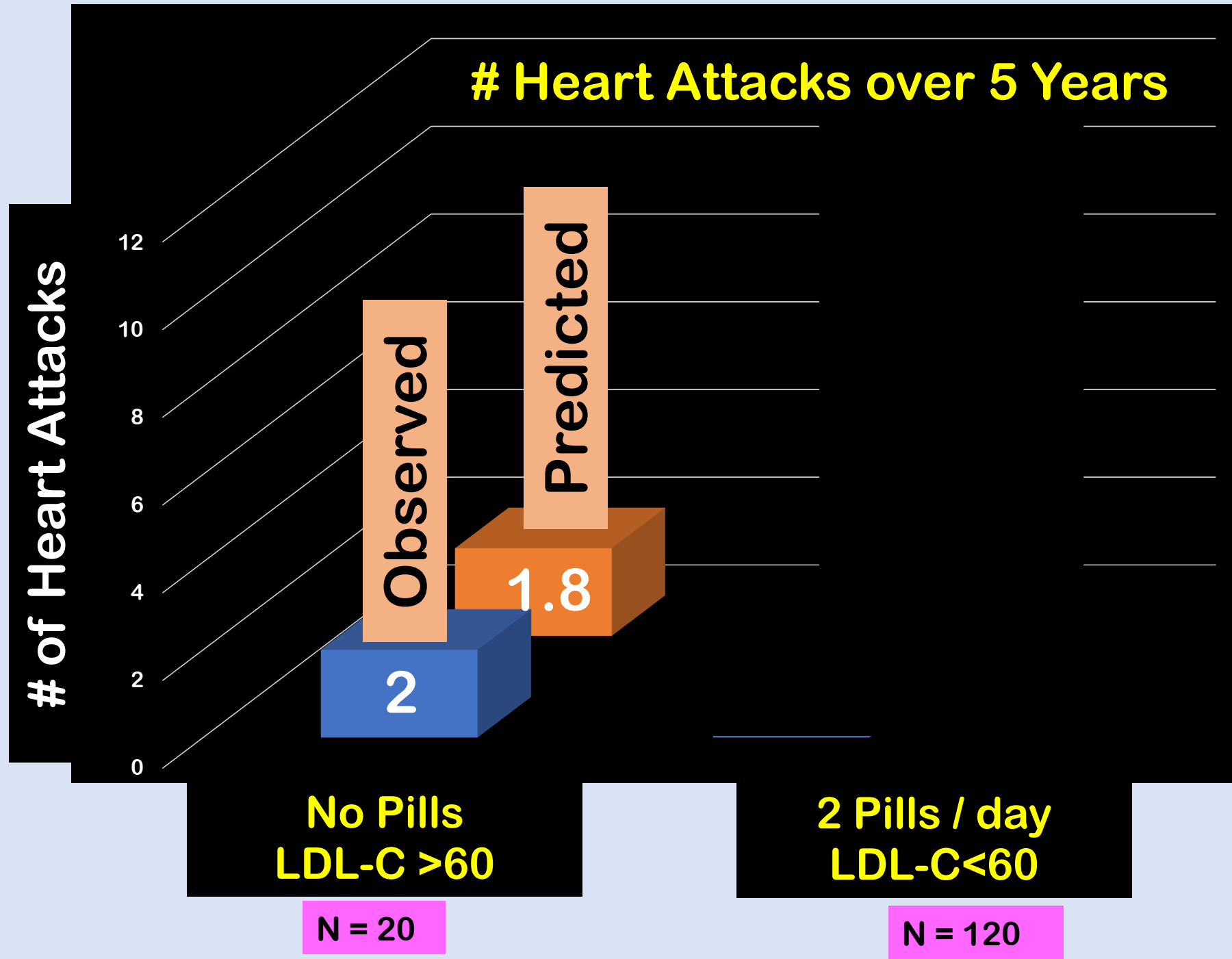
1.8

No Pills  
LDL-C >60

N = 20

2 Pills / day  
LDL-C <60

N = 120



# Prevention of Coronary Heart Disease: A Translational Clinical Challenge

Julie Giannini, Janae Padilla, Robert Philip Eaton, Kristen Gonzales, David S. Schade\*

Department of Internal Medicine, Division of Endocrinology and Metabolism, University of New Mexico Health Sciences Center, Albuquerque, USA

Email: \*dschade@salud.unm.edu

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<https://doi.org/10.4236/wjcd.2022.121002>

Received: December 9, 2021

Accepted: January 18, 2022

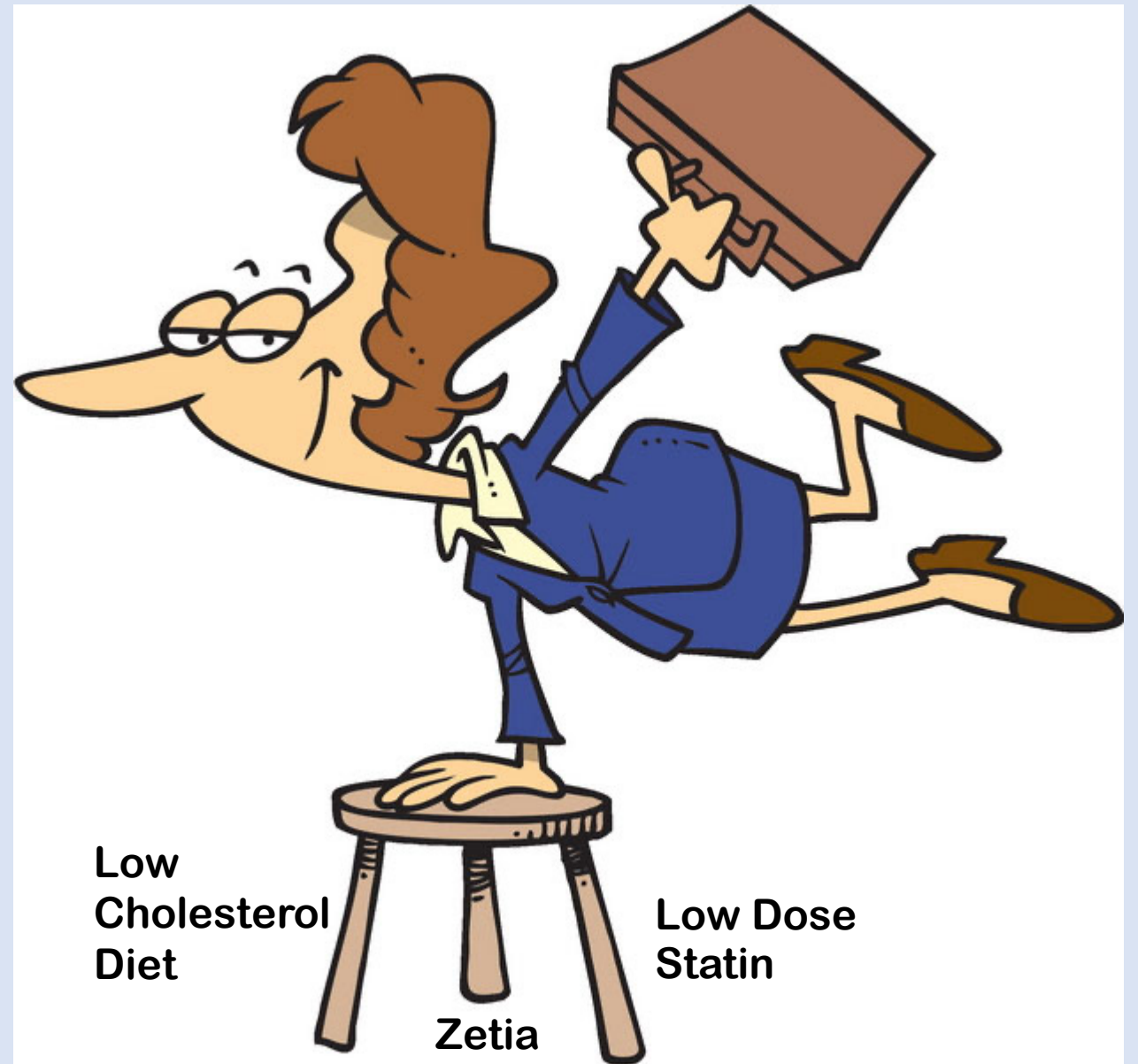
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## Abstract

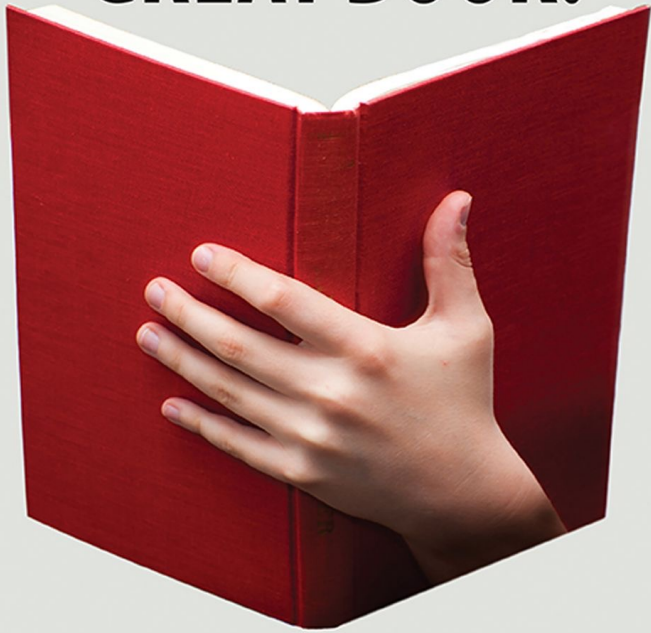
**Introduction:** Atherosclerotic cardiovascular disease is a dysmetabolic medical condition resulting in the #1 cause of morbidity and mortality in the United States. Coronary Artery Calcium (CAC) CT non-invasively identifies atherosclerosis in asymptomatic individuals. This translational study tested the hypothesis that clinically overt cardiovascular disease can be prevented in asymptomatic individuals in a medical clinic. **Methods:** Two hundred and six asymptomatic individuals in a medical clinic. **Results:** Two hundred and six asymptomatic individuals in a medical clinic. **Conclusion:** Two hundred and six asymptomatic individuals in a medical clinic.



# Want to Prevent a heart Attack?



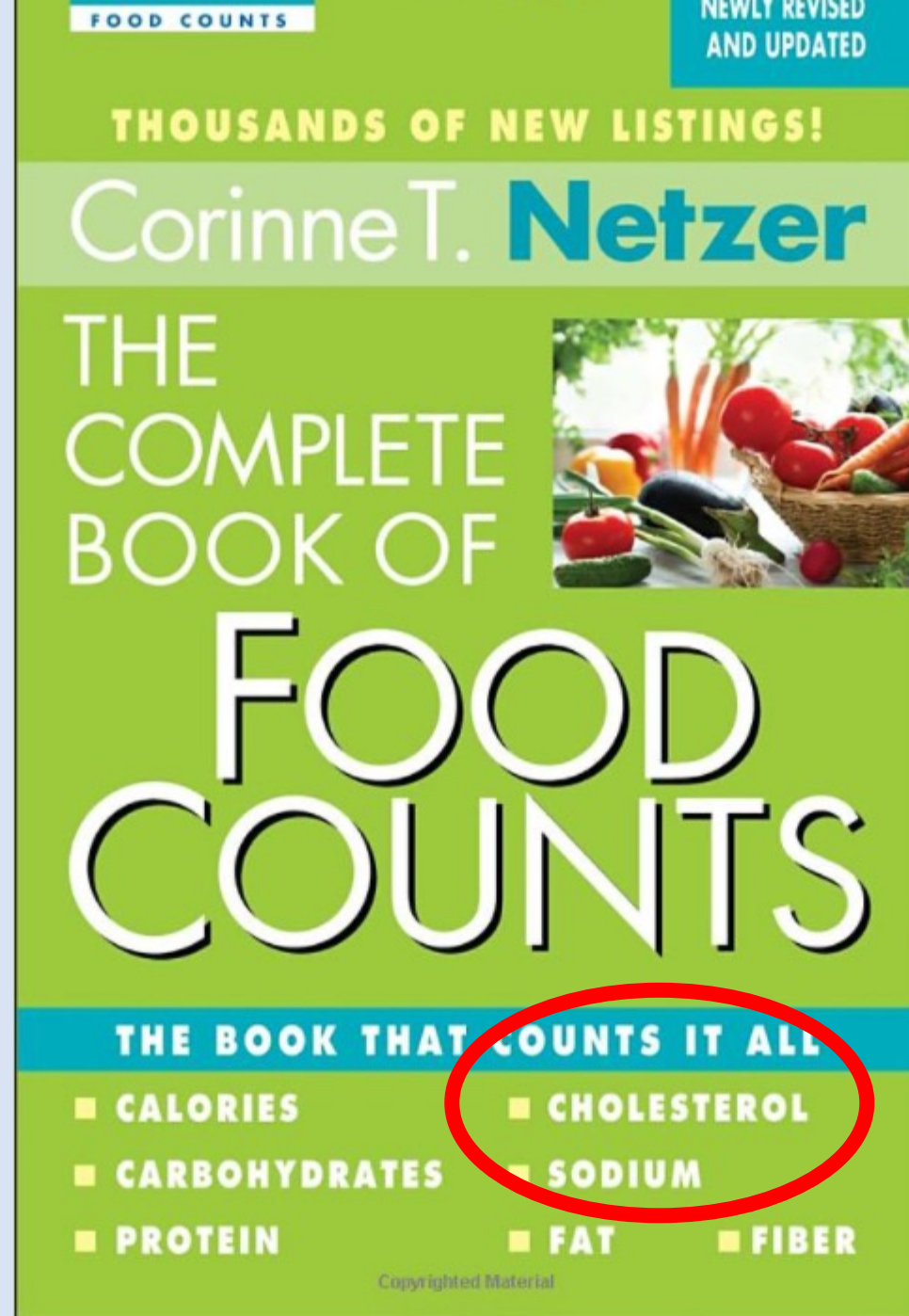
“This Is a  
**GREAT BOOK!**”



**\$9.99**

from

**Amazon.com**



[Back to Store](#) THE COMPLETE BOOK OF FOOD COUNTS, 9TH EDITIO...

Aa



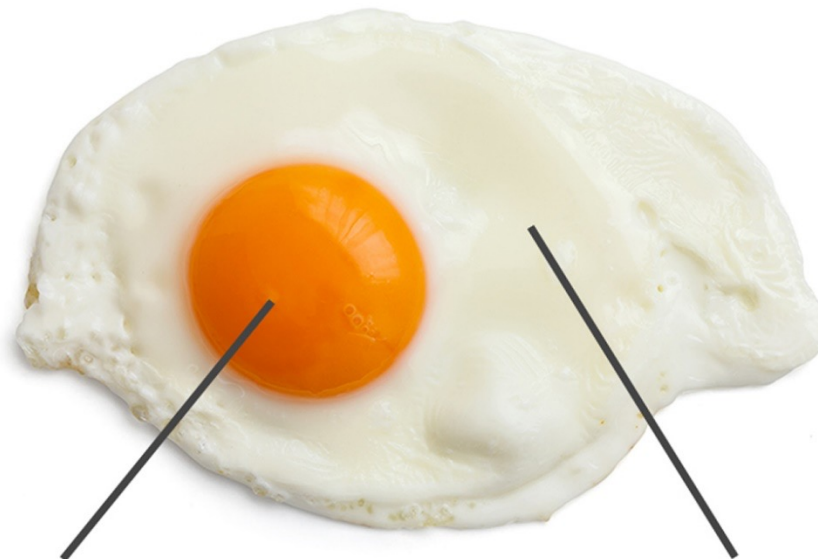
**Diet goal is  
less than  
200 mg  
each day**

Food and Measure	cal.	prot. (gms)	carbo. (gms)	fat (gms)	chol. (mgs)	sod. (mgs)	fiber (gms)
<b>Arby's, dressing 1 serving:</b>							
breakfast biscuit:							
plain .....	250	6.0	32.0	11.0	0	780	1.0
bacon/egg/cheese ....	450	18.0	34.0	26.0	165	1610	1.0
chicken .....	530	18.0	60.0	24.0	45	1310	1.0
ham/egg/cheese ....	420	22.0	34.0	22.0	180	1720	1.0
sausage .....	460	13.0	33.0	31.0	40	1230	1.0
sausage gravy .....	590	14.0	48.0	38.0	40	1930	1.0
sausage/egg/cheese ..	590	20.0	35.0	42.0	195	1680	1.0
breakfast croissant:							
bacon/egg/cheese ....	390	16.0	24.0	24.0	190	1010	1.0
ham/cheese .....	270	15.0	22.0	14.0	60	920	1.0
ham/egg/cheese ....	360	19.0	24.0	20.0	205	1130	1.0
sausage/egg/cheese ..	530	18.0	24.0	40.0	220	1090	1.0
breakfast platter:							
bacon/egg/biscuit ....	570	23.0	43.0	30	280	1690	2.0
bacon/egg/muffin ....	600	21.0	44.0	33.0	335	1170	2.0
ham/egg/biscuit .....	530	24.0	43.0	26.0	290	1730	2.0
ham/egg/muffin .....	560	23.0	44.0	29.0	345	1200	2.0
sausage/egg/biscuit ..	700	23.0	43.0	44.0	305	1640	2.0
sausage/egg/muffin ..	720	22.0	44.0	48.0	360	1120	2.0
breakfast sourdough:							





# Egg Nutrition



## Yolk

<b>Fat</b>	<b>4.5 g</b>
<b>Sat. Fat</b>	<b>1.6 g</b>
<b>Cholesterol</b>	<b>184 mg</b>
Carbohydrates	0.5 g
Protein	2.5 g

## White

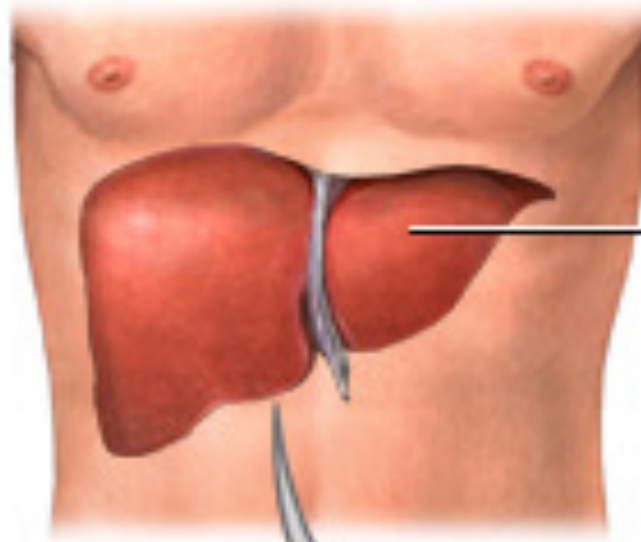
Fat	0 g
Sat. Fat	0 g
Cholesterol	0 mg
Carbohydrates	0 g
<b>Protein</b>	<b>4 g</b>



“We are all born  
ignorant, but we can  
all get smart with a  
little effort”

Benjamin Franklin

We absorb cholesterol from meat, dairy products and other animal foods and the body also produces cholesterol in the liver

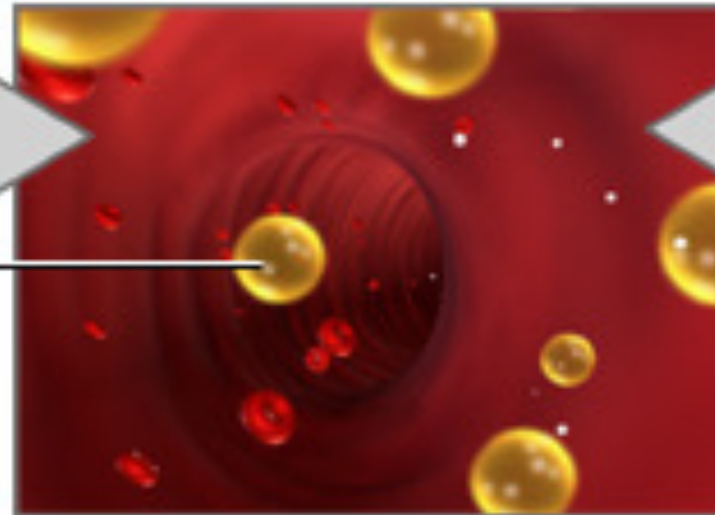


Liver



**75%**

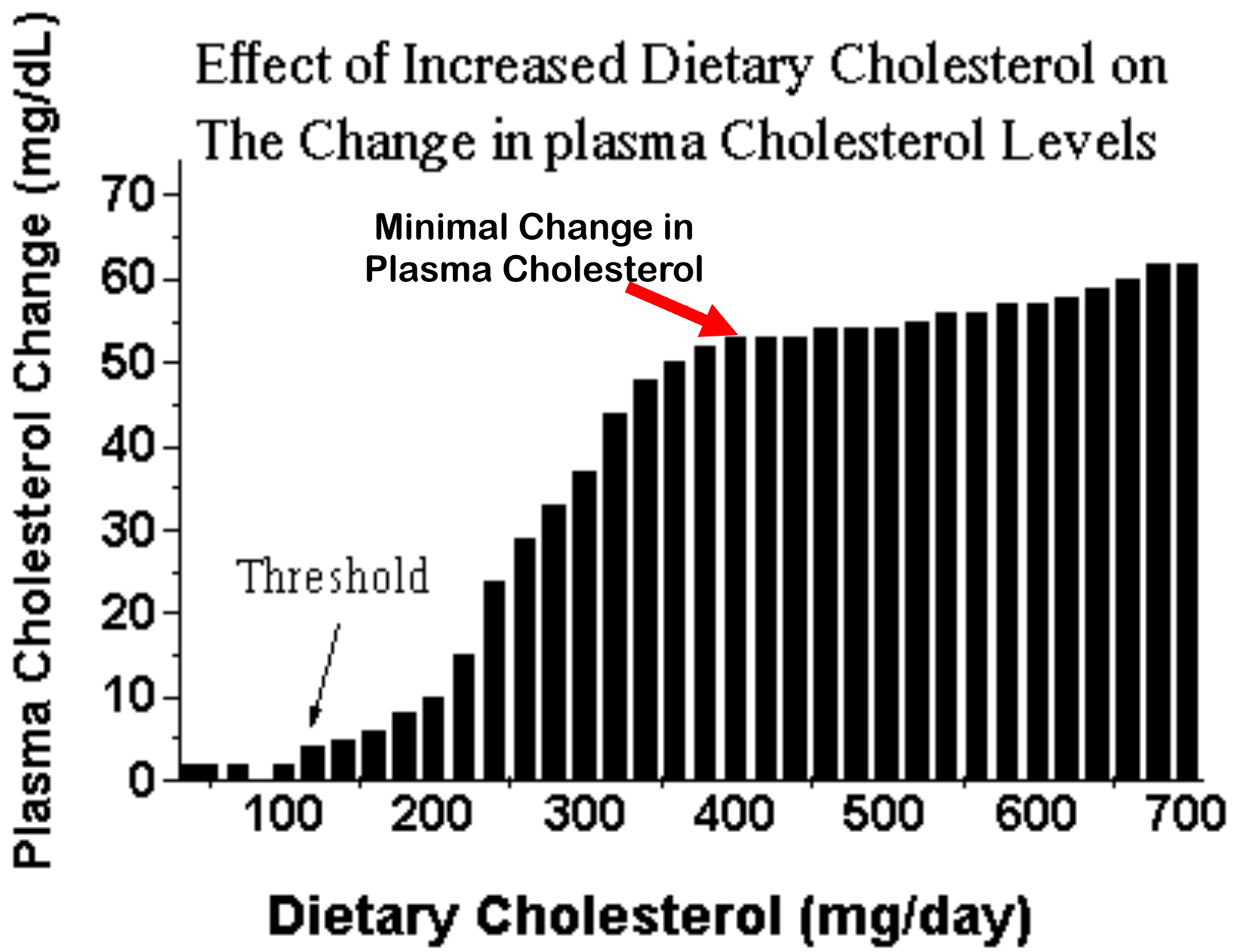
Cholesterol



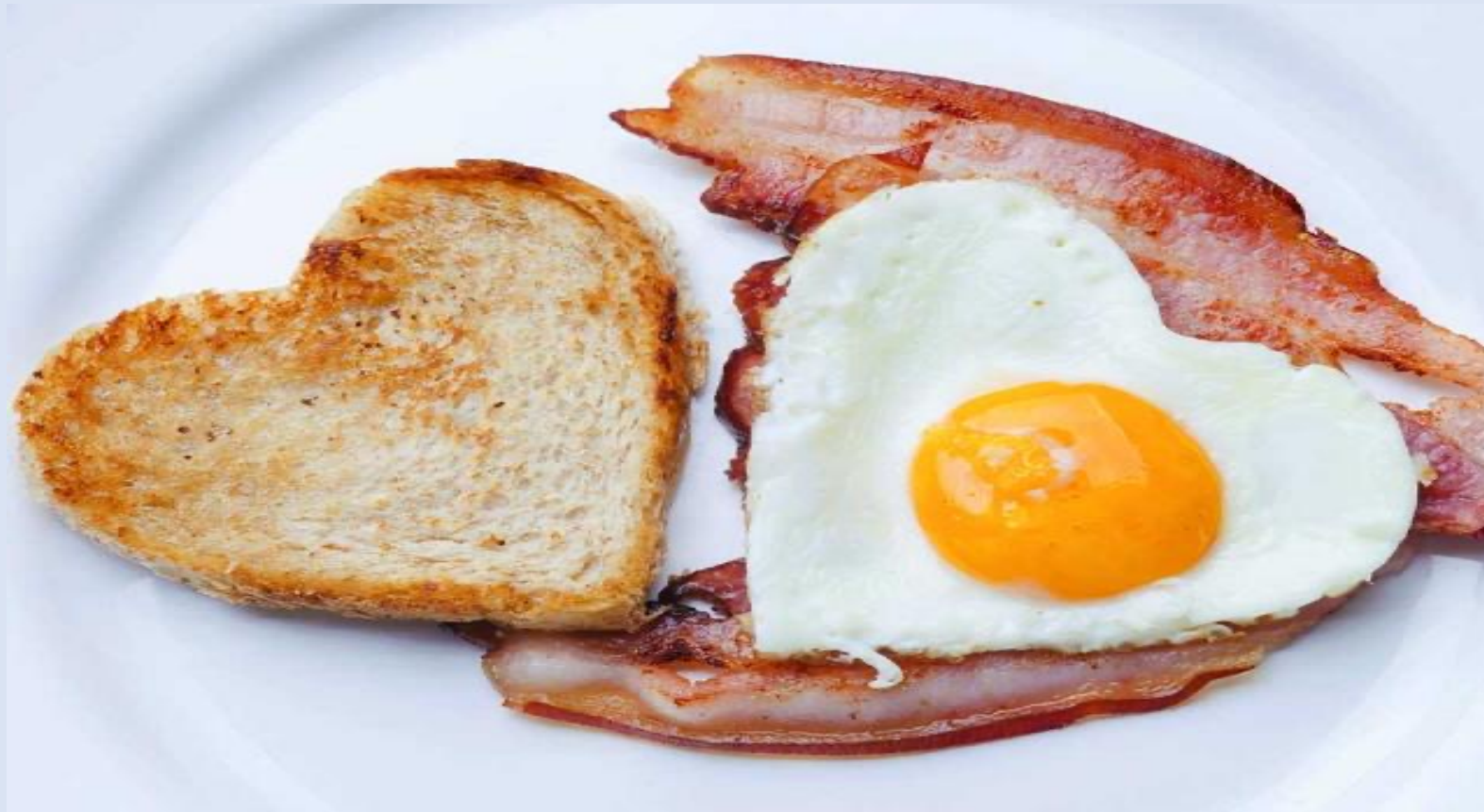
**25%**



Saturation  
of  
Cholesterol  
Receptors  
with  
increasing  
Dietary  
Cholesterol



Adapted from: Hopkins PN. Am J Clin Nutr. 1992 Jun;55(6):1060-70. doi: 10.1093/ajcn/55.6.1060. PMID: 1534437.



**Here is about 300 mg of cholesterol**

**A good  
Prescription for  
reversing Heart  
Disease**



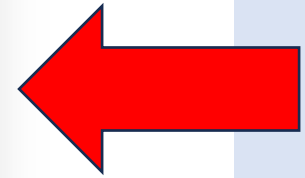
**Cost?**  
**Rosuvastatin = \$0.14/d**  
**Ezetimibe = \$0.36/d**  
**Total Cost = \$0.50/d**





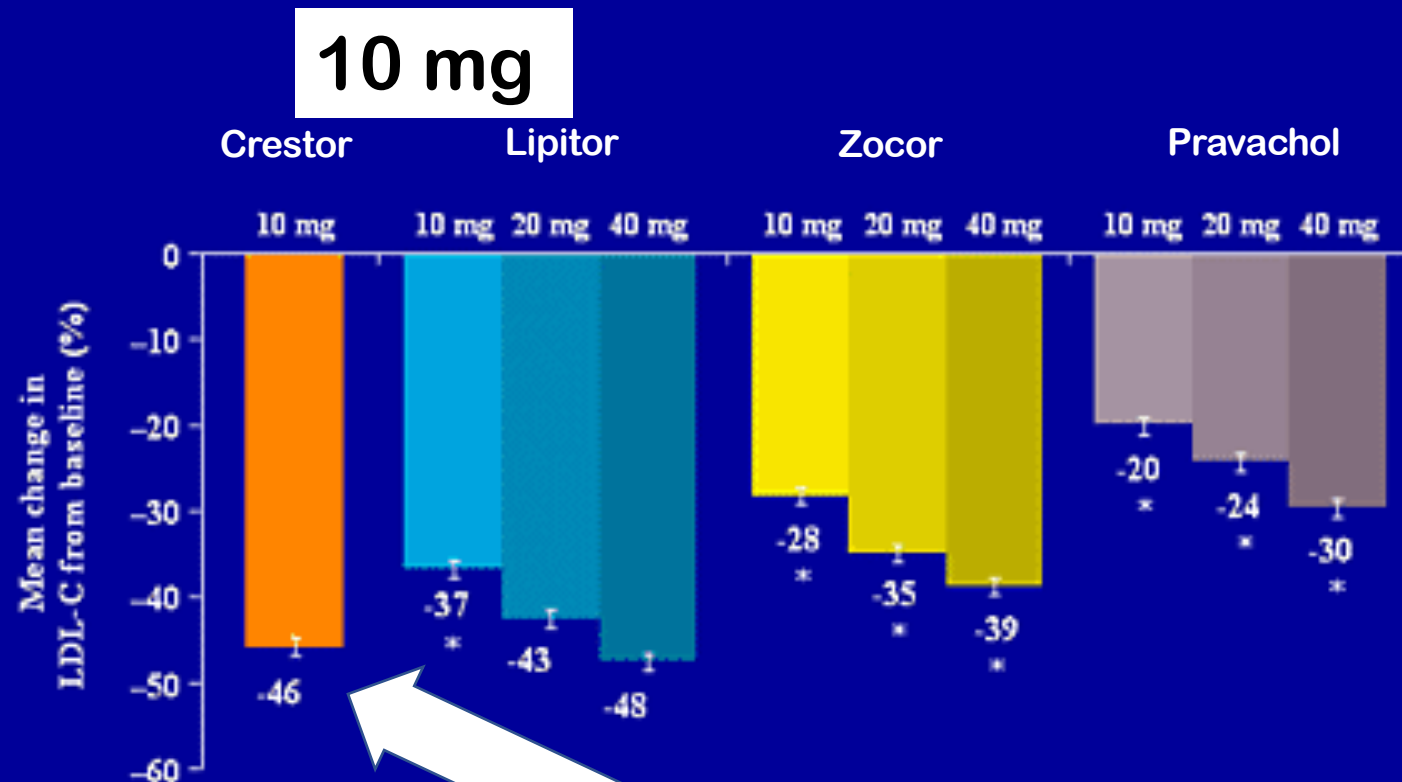
**Which statin  
should I  
prescribe?**

***Remember – The side effects of  
statins are dose related.***



# Crestor (rosuvastatin) is the most potent statin

## STELLAR Pair-Wise Comparisons: Rosuvastatin 10 mg vs Other Statins on LDL-C



Jones PH et al. *Am J Cardiol*. 2003;92:152-160.

**Best**

10 mg of rosuvastatin has the same LDL lowering potency as 40 mg of Lipitor



Ezetimibe Sandoz® 10mg  
tablets  
SANDOZ  
a Novartis company



# Ezetimibe Sandoz®

## 10mg

tablets

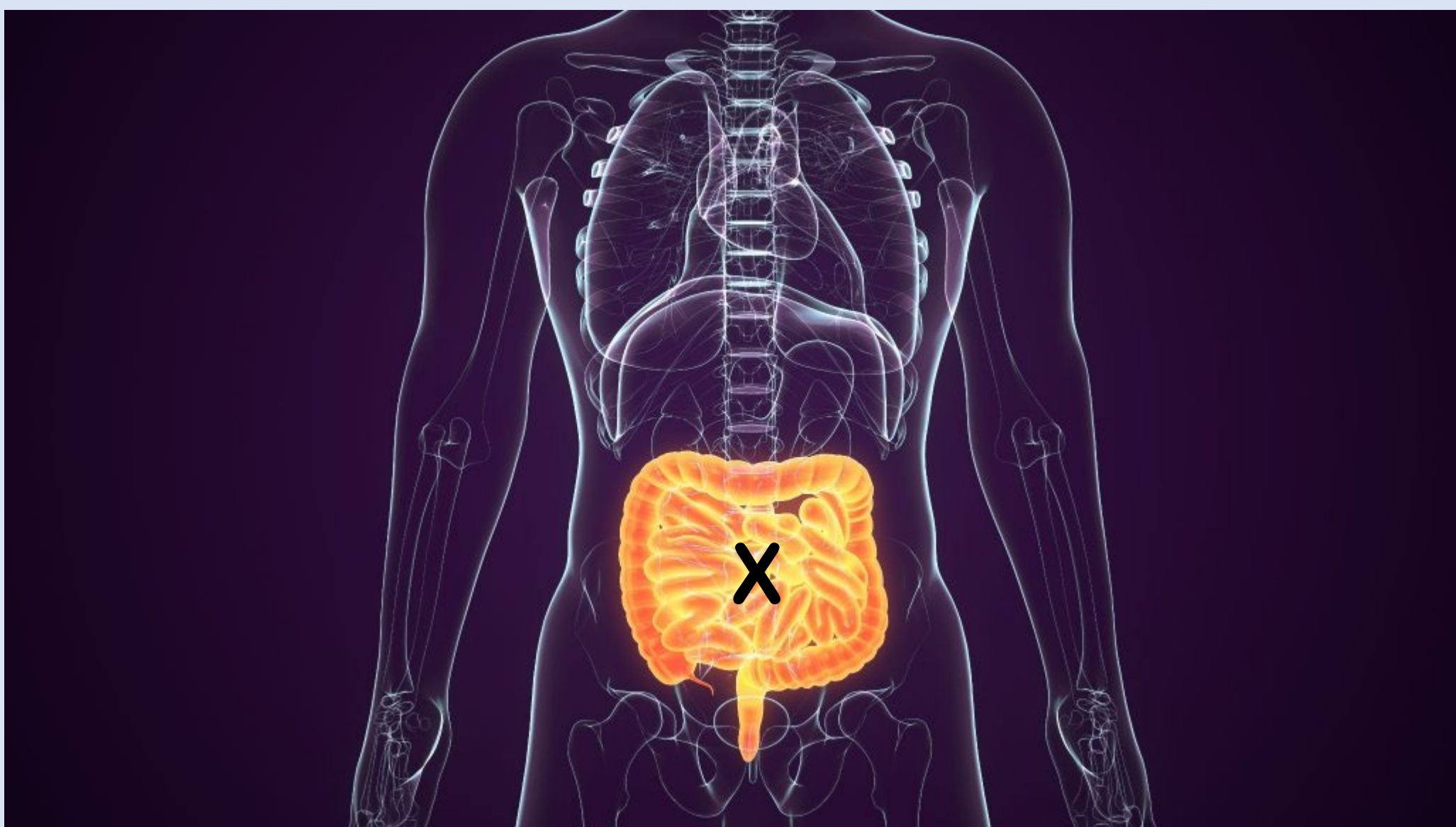
Each tablet contains 10 mg of ezetimibe.

For oral use

 **SANDOZ**  
a Novartis company

**30 tablets**



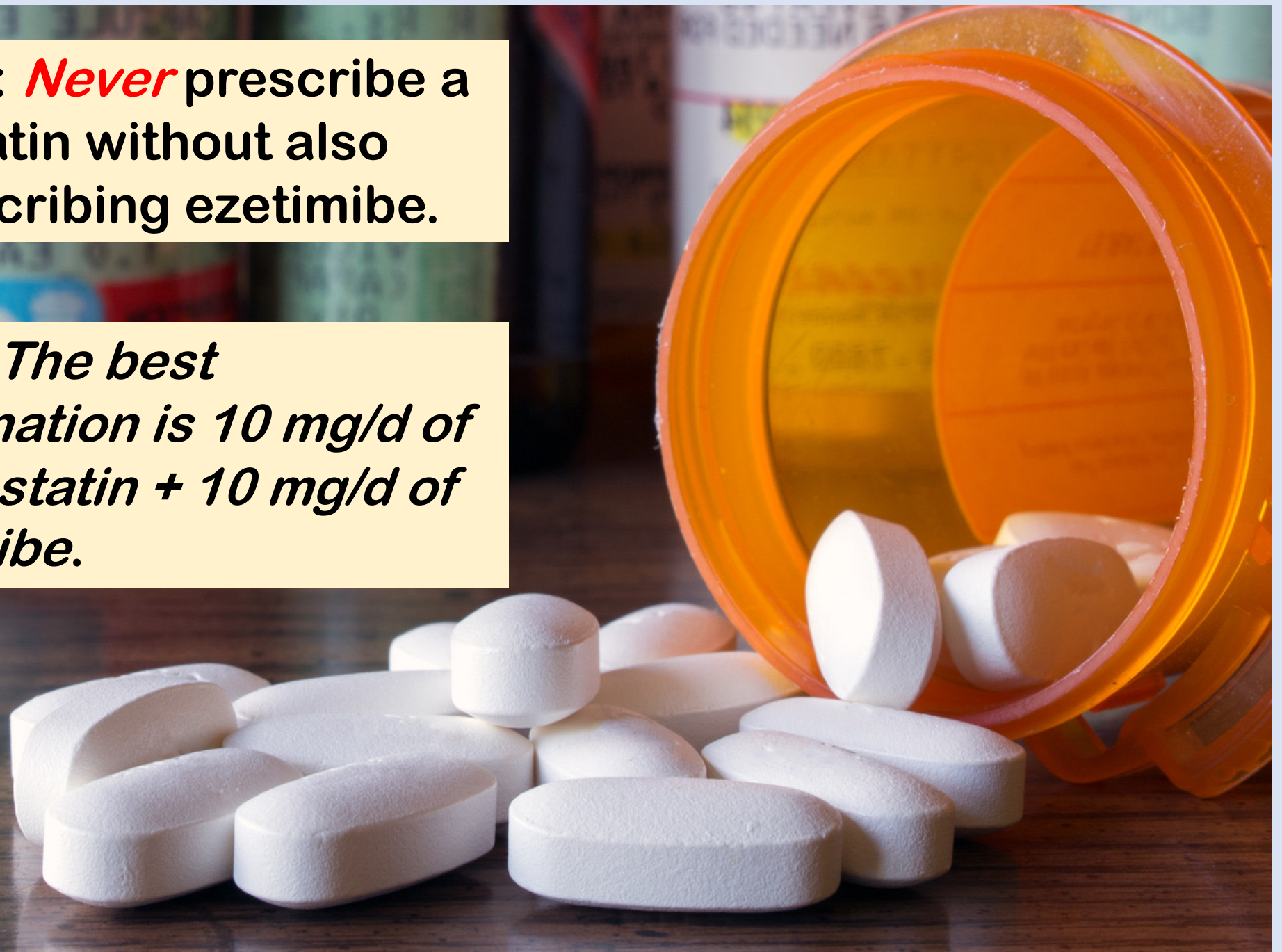


**Ezetimibe blocks 50% of  
cholesterol absorption (not fat)**



Point : ***Never*** prescribe a statin without also prescribing ezetimibe.

Point : *The best combination is 10 mg/d of rosuvastatin + 10 mg/d of ezetimibe.*





A photograph of an astronaut in a white spacesuit standing on the moon's surface. The astronaut's helmet visor reflects the lunar landscape. The background is a dark, cratered lunar surface under a bright sky.

**Houston,  
we have an  
opportunity.**

**Order more  
coronary artery  
calcium scans**

**Free handout for  
CAC**

# Any Questions ?



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