

Return of the Good Egg



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Education
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A Guide TO GOOD EATING



MILK

2 OR MORE GLASSES DAILY . . . FOR ADULTS
3 - 4 OR MORE GLASSES DAILY . . . FOR CHILDREN
*To drink, combined with other foods,
in ice cream and in cheese*



VEGETABLES

2 OR MORE SERVINGS DAILY OTHER THAN
POTATO . . . 1 green or yellow; "greens" often



FRUITS

2 OR MORE SERVINGS DAILY
At least 1 raw; citrus fruit or tomato daily



EGGS

3 TO 5 A WEEK; 1 DAILY PREFERRED



MEAT, CHEESE, FISH, POULTRY

1 OR MORE SERVINGS DAILY
Dried beans, peas, peanuts occasionally



CEREAL AND BREAD

2 OR MORE SERVINGS DAILY
*Whole-grain value or enriched
Added milk improves nutritional values*



BUTTER

2 OR MORE TABLESPOONS DAILY

**OTHER FOODS TO SATISFY
APPETITE AND COMPLETE
GROWTH AND ACTIVITY NEEDS**

The nutritional information given on this chart has been reviewed by the
Committee on Foods and Nutrition of the American Medical Association and
found consistent with current authoritative medical opinion.

DIETARY GUIDELINES

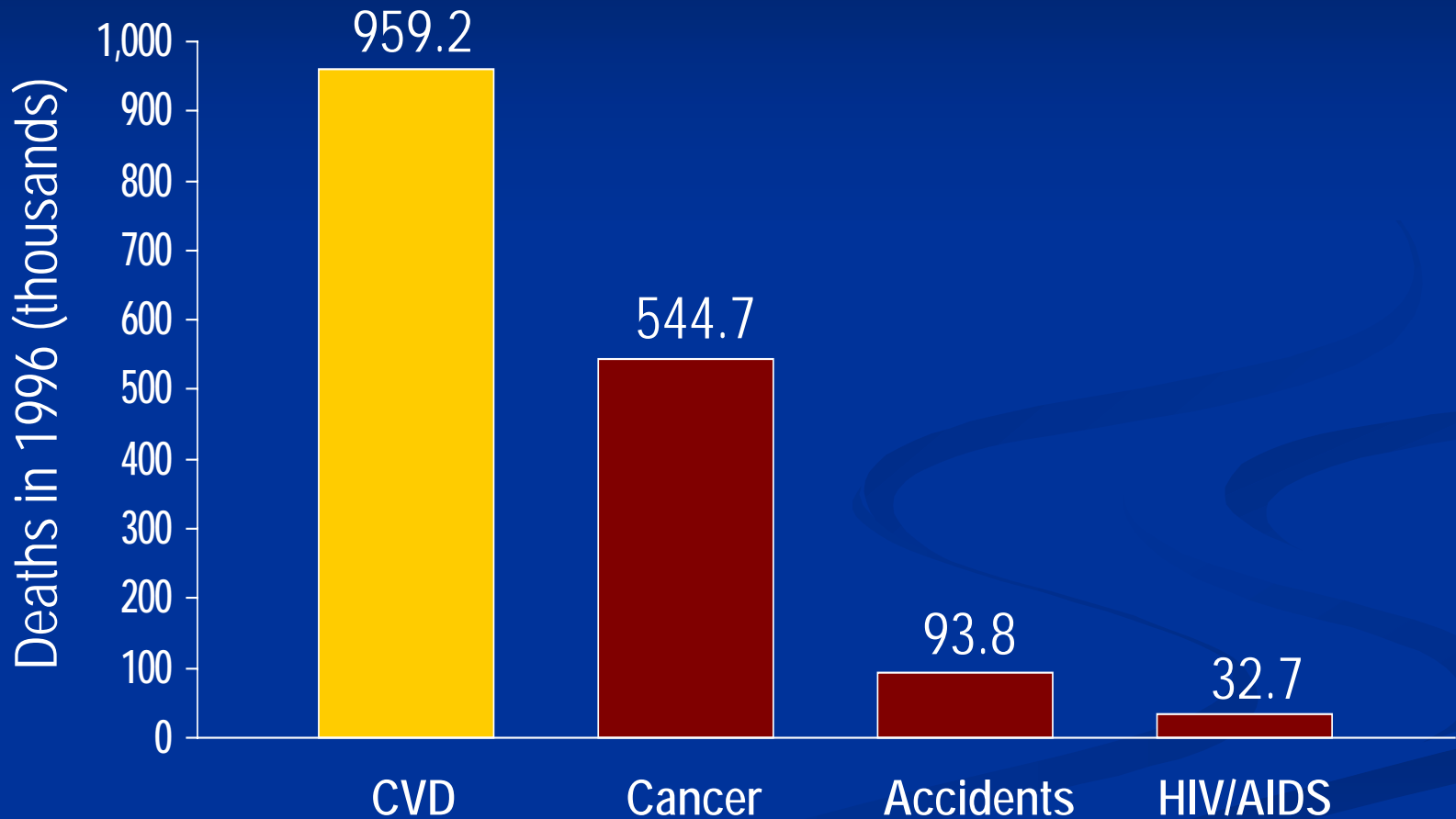
- ✓ 30% or less of calories from fat
- ✓ 8 - 10% of calories from saturated fat
- ✓ Up to 10% of cal from polyunsaturated fat
- ✓ Up to 15% of cal from monounsaturated fat
- ✓ Less than 300 mg/day of cholesterol
- ✓ No more than 2.4 g/day sodium
- ✓ 55 - 65% of cal as complex carbohydrates
- ✓ If you drink, no more than 2 drinks per day



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Causes of Death in the US



MAJOR CVD RISK FACTORS

Smoking

High Blood Pressure

High Blood Cholesterol

Obesity

Family History [Genetics]

AHA 1968

American Heart Association Dietary Guidelines

Dietary Cholesterol

The association noted that dietary cholesterol – the cholesterol found in foods like eggs and shrimp – be limited to no more than 300 mg per day, and *recommended that individuals eat no more than 3 egg yolks per week.*

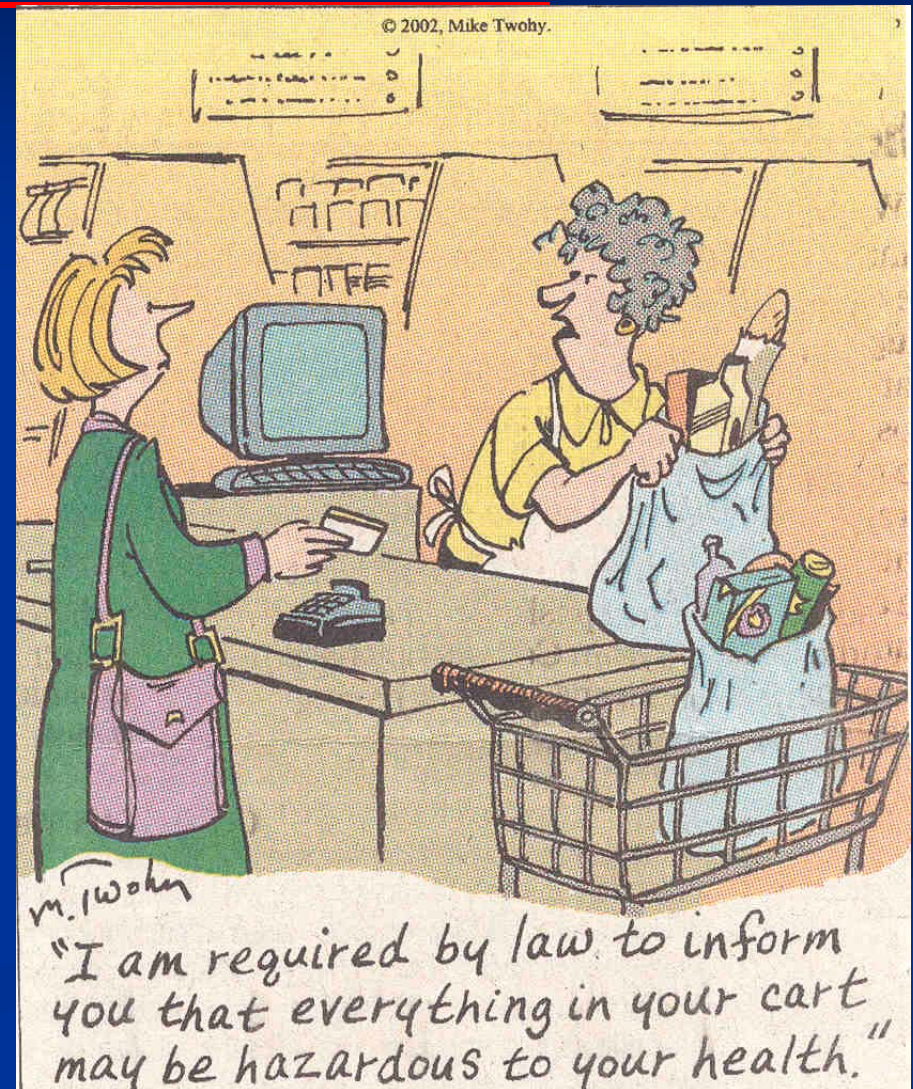
PRECAUTIONARY PRINCIPLE

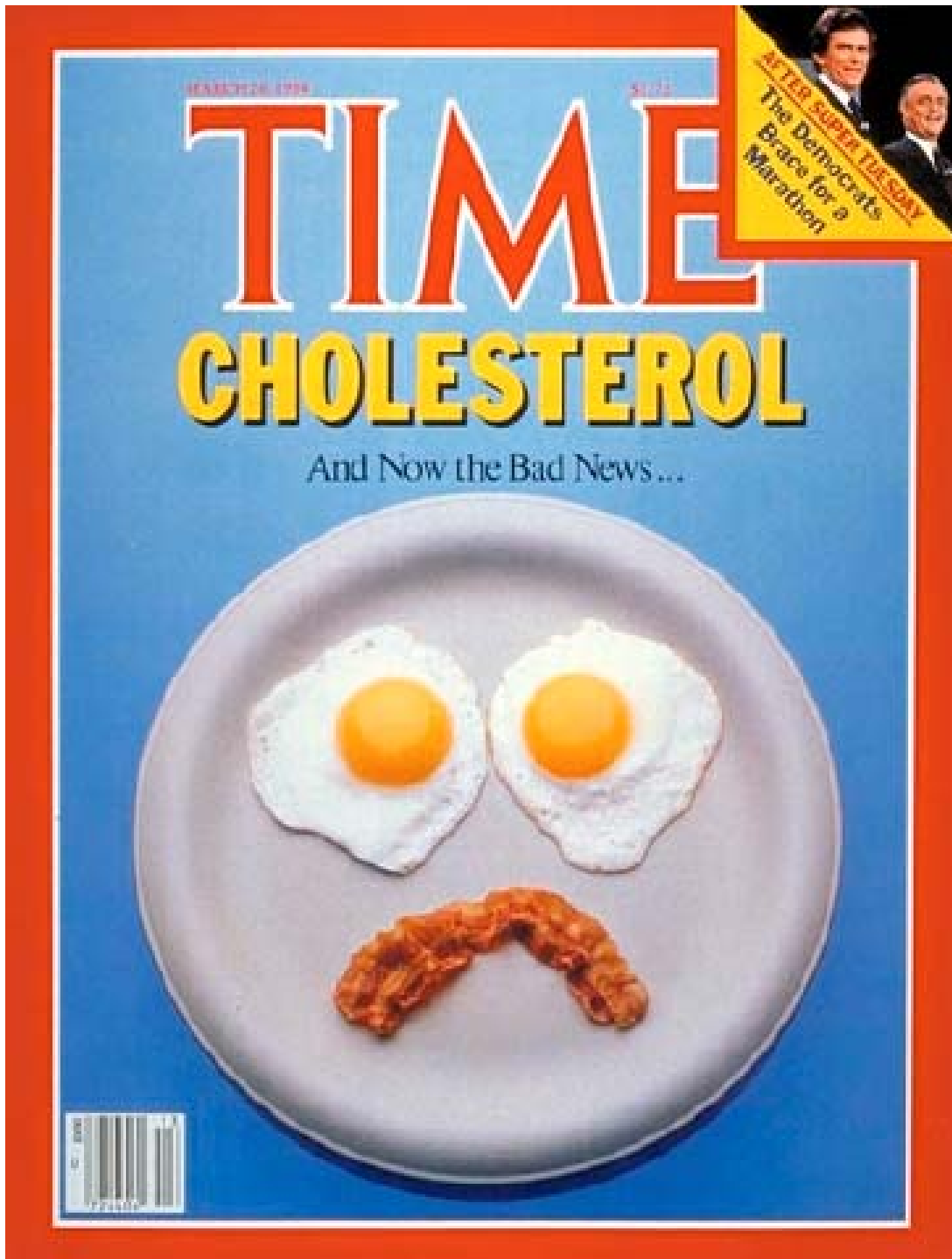


"THERE'S NOTHING TO EAT!"

MASS OF CONFUSION

- Low-fat diet
- Very-low fat diet
- High fat diet
- Low carb diet
- High protein diet
- Zone, type & actress diets
- ***Every meal a life or death decision!***





Eggs became the national icon for dietary excesses and associated high plasma cholesterol levels and CHD risk.

CHOLESTEROL RESTRICTIONS

Scientific Basis:

- Animal Studies
- Epidemiological Surveys
- Clinical Investigation

ANIMAL STUDIES

Complications:

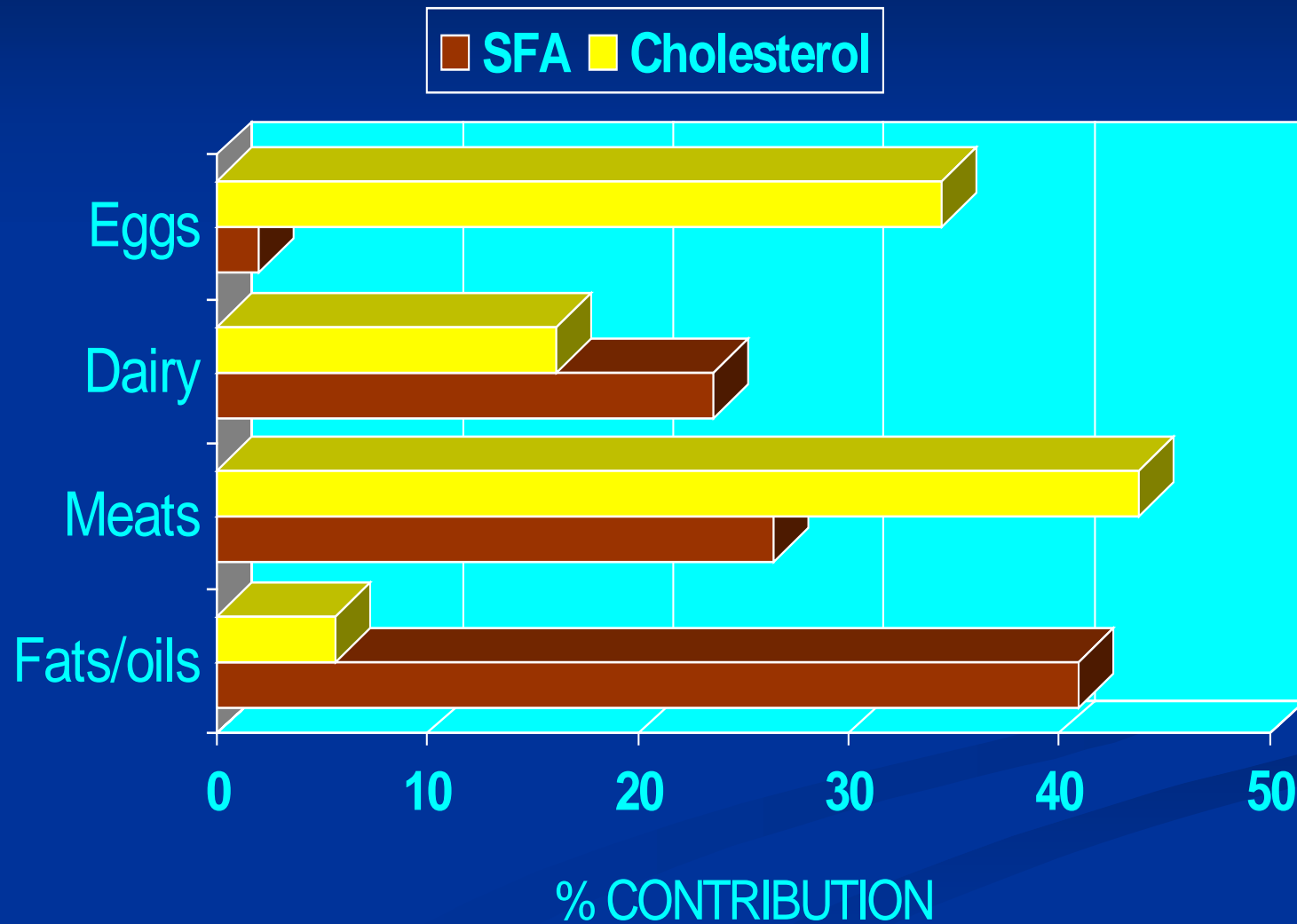
- Hypersensitive (rabbits) vs non-responsive (dogs, rats) animals
- Excessive test doses (1.7 mg/kcal = 1,700 mg/1000 kcal)
- Plasma lipoprotein profiles (HDL vs LDL)

EPIDEMIOLOGICAL SURVEYS

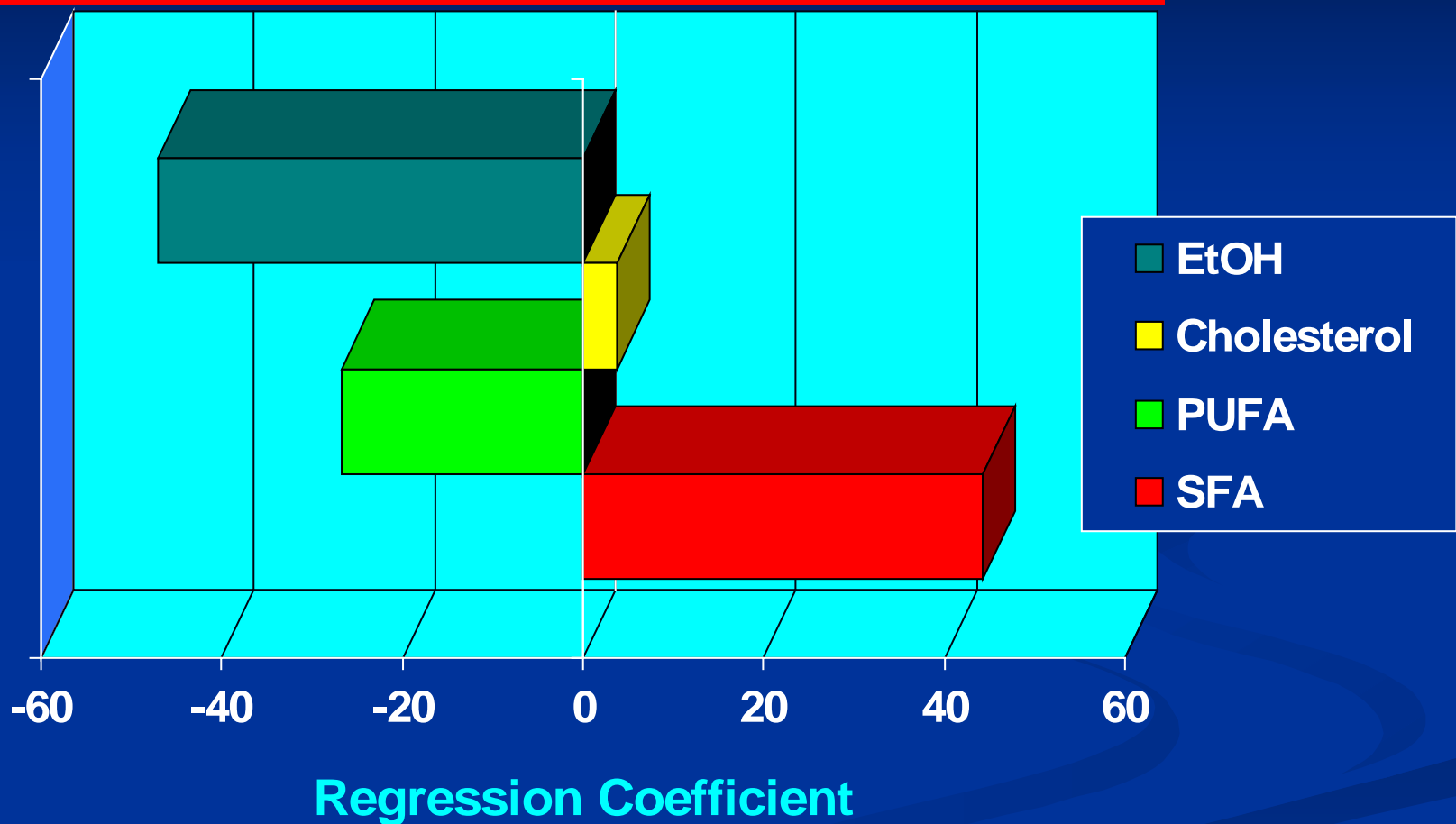
Complications:

- Co-linearity of saturated fat and cholesterol
- Diet high in animal products usually a diet low in fruits and vegetables

CHOLESTEROL & SFA

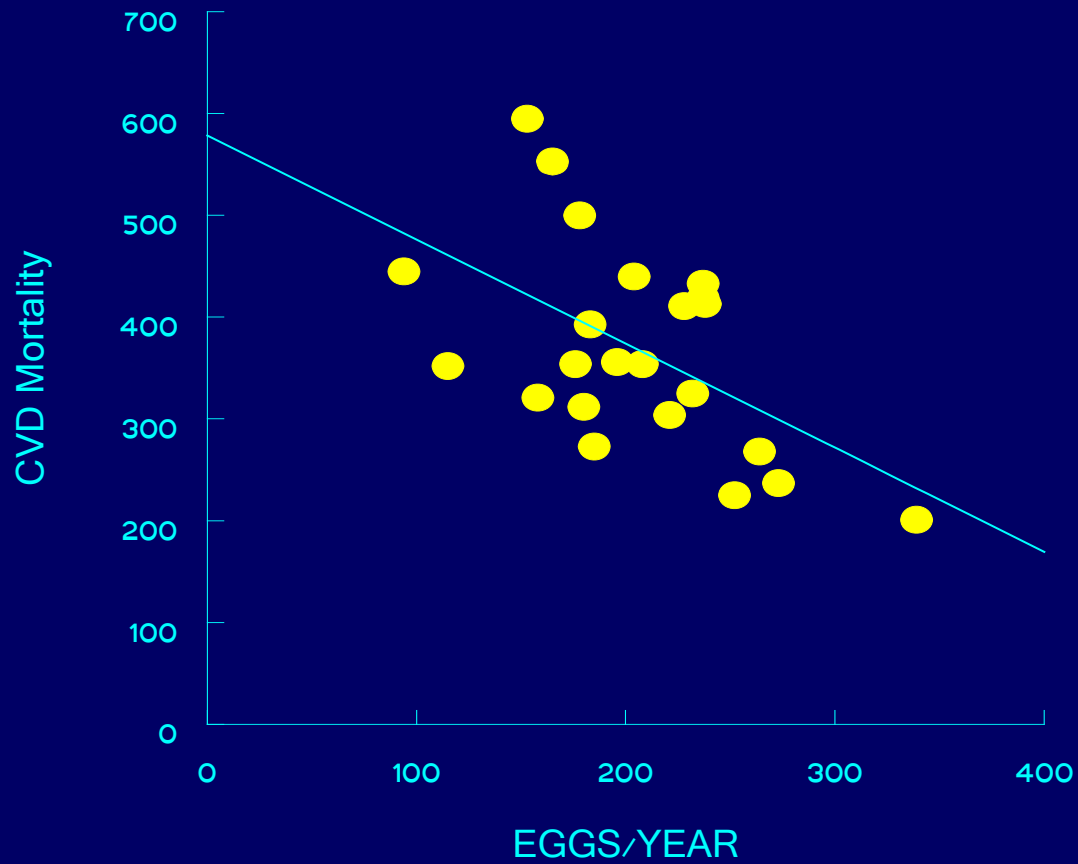


DIET & CHD: 18 Countries



Hegsted & Ausman 1988. J Nutr 118:1184-1189

EGGS & CVD



FRAMINGHAM - 1982

"It was concluded that within the range of egg intake of this population differences in egg consumption were unrelated to blood cholesterol level or coronary heart disease incidence."

[Dawber et al. 1982 Am J Clin Nutr 36:617-625.]

EGGS & CVD

Health Professionals Follow-Up Study

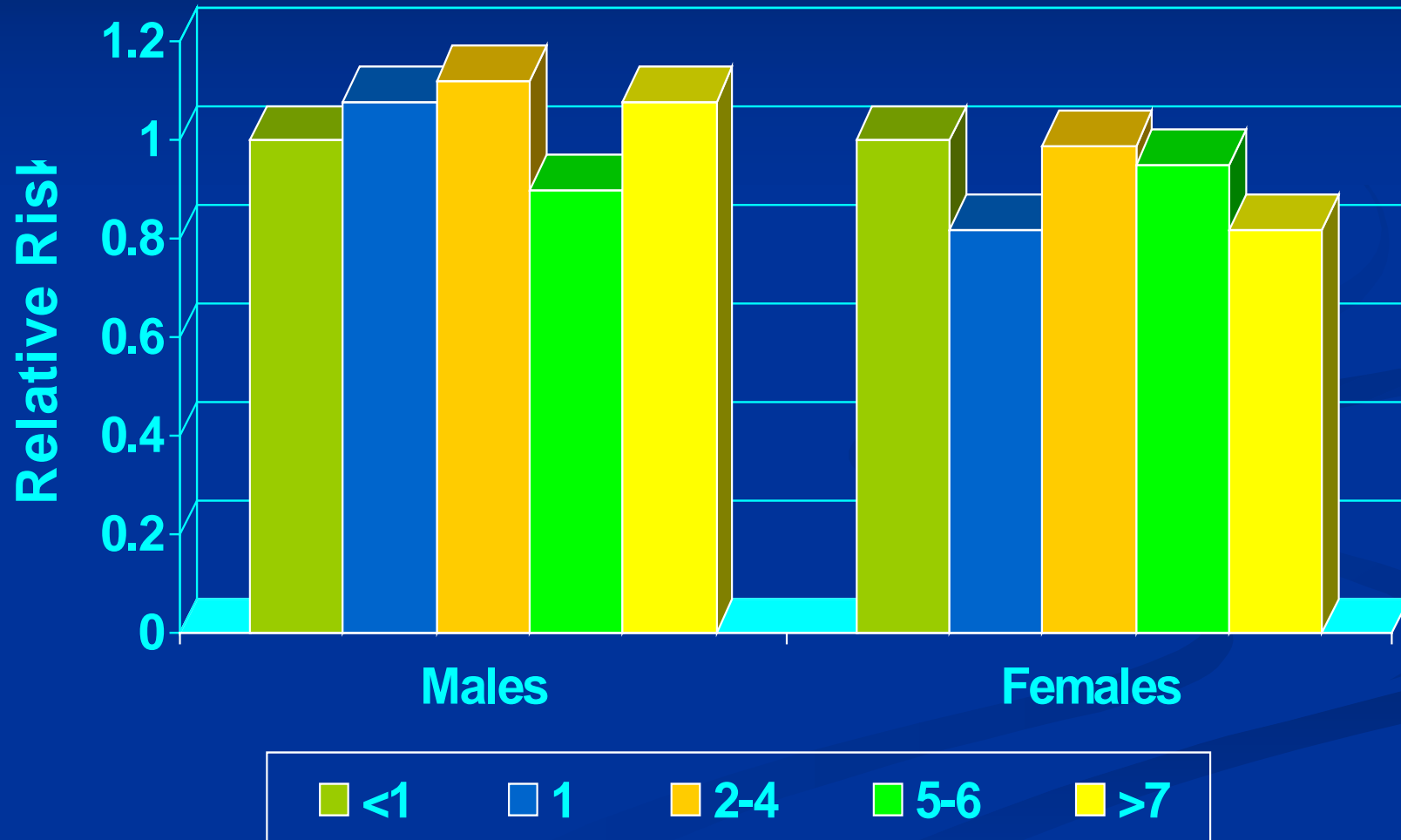
37,851 men followed for 8 years, 866 cases of CHD

Nurses' Health Study

80,082 women followed for 14 years, 939 cases of CHD

What is the relationship between weekly egg consumption and CHD risk?

EGGS / WK & CHD RISK



CLINICAL INVESTIGATION

Complications:

- Pharmacological vs physiological levels (1,500 mg/day, 6 eggs per day)
- Changes in plasma total cholesterol; relative changes in LDL and HDL cholesterol levels

GOOD-BAD CHOLESTEROL

	<u>300</u> <u>mg/day</u>	<u>500</u> <u>mg/day</u>
Total-C	200	205
LDL-C	130	134
HDL-C	50	51
LDL:HDL	2.6	2.6

DIETARY RECOMMENDATIONS

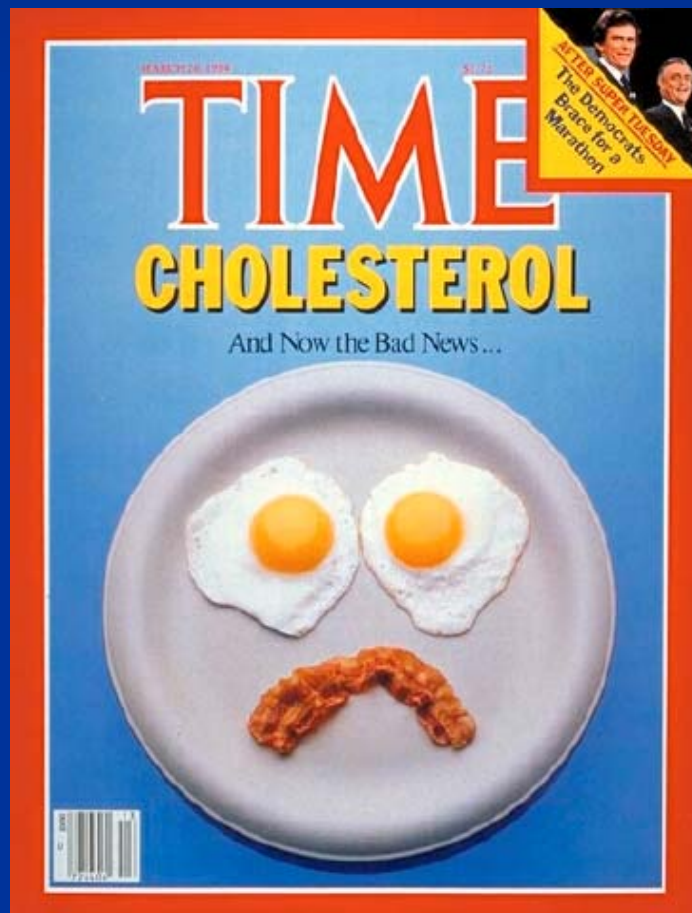
"One of the problems is that strong recommendations have often been made on very weak data. It may have been the best guess at the moment, but often the recommendations are repeated so many times that people forget they were rough guesses in the first place and come to think they are hard facts."

Dr. Walter Willett, 2000

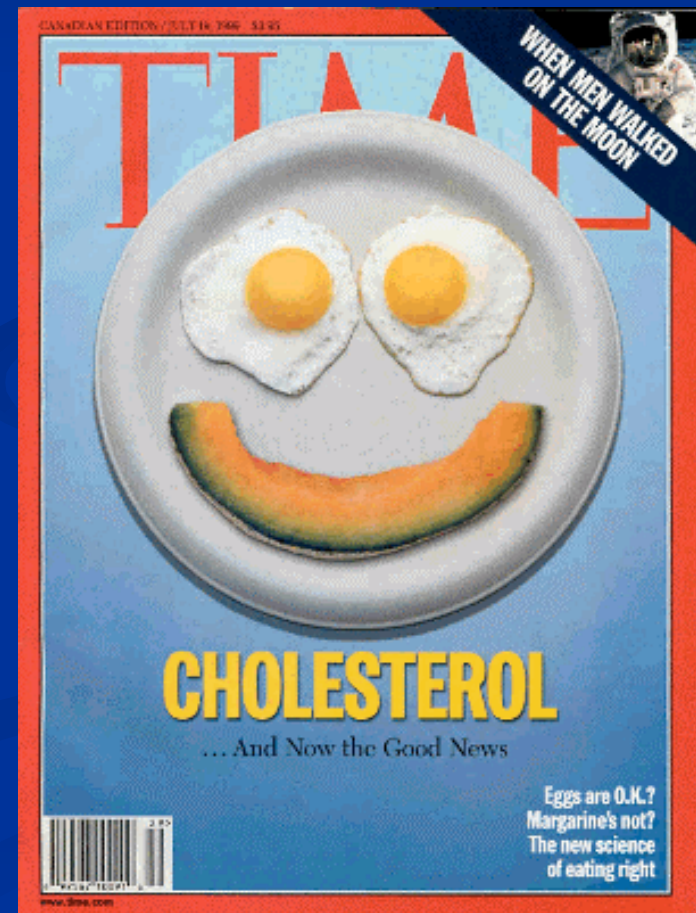
Harvard School of Public Health

IS CHANGE POSSIBLE?

1984



1999



2002: A CHANGE OF HEART

SEARCH

DONATE HELP CONTACT SITE INDEX HOME

May 6, 2002

American Heart Association®

Fighting Heart Disease and Str

Eggs

AHA Scientific Position

Eggs are rich in protein, B vitamins, iron, and other minerals. All of these are essential for good health. But egg yolks are also rich in dietary cholesterol, which contributes to elevated blood cholesterol levels. High blood cholesterol is a major risk factor for coronary heart disease, which leads to heart attack.

AHA Recommendation

We recommend that healthy American adults limit cholesterol intake to less than 300 milligrams (mg) per day. One large whole egg contains 220 mg of cholesterol. This is 71 percent of the daily recommended amount. **If you consume an egg daily, it's important to limit dietary cholesterol from other sources, such as meats, poultry, and dairy products.** The key is not to focus on any one cholesterol-containing food.

Our dietary guidelines, revised in 2000, emphasize an overall dietary pattern for good health. **There is no longer a specific recommendation on the number of egg yolks a person may consume per week.**

A simple way to work a single egg into a day's menu would be to make one of your meals vegetarian, without cheese (also a source of dietary cholesterol) and avoid baked goods (like muffins, cookies and cakes) that often have eggs as a major ingredient. If you have a meat-based meal that day, make sure your serving of meat is no bigger than a deck of cards, and preferably lean. In addition, many cholesterol-free egg substitutes and recipes with yolk-free alternatives are available. In the past, we recommended limiting the number of egg yolks consumed weekly to a specific number. We made this recommendation as a way to help people limit cholesterol in their diet to less than 300 milligrams daily.

DID YOU KNOW?

Nearly one third of all Americans with high blood pressure don't even know they have it. [read more...](#)

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FORGOTTEN POSITIVES

- High quality protein
- Vitamins -minerals
- Carotenoids
- Choline
- Satiety, glycemic index
- Affordability
- Convenience



NUTRIENT DENSE EGGS

Two Large Eggs = 155 calories

6% food energy

20% protein

53% essential aa

30% riboflavin

12% vitamin A

16% vitamin B₁₂

12% folate

12% vitamin D

16% phosphorous

8% vitamin B₆

34% selenium

8% iron

8% zinc

6% vitamin E

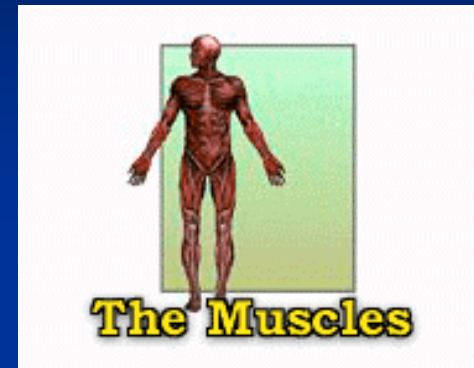
AFFORDABILITY

Cost of 20 grams of protein:

eggs	\$0.25
pork shoulder	\$0.40
ground beef	\$0.42
chicken breast	\$0.50
frankfurter	\$0.94
pork chop	\$1.09
rib roast	\$1.43

PROTEIN & EXERCISE

- Sarcopenia: age-related loss of skeletal muscle mass.
- Need for high quality, low-fat protein for older people.
- High quality protein for muscle growth in response to exercise.



EGGS & WEIGHT CONTROL

- Low calorie, nutrient dense.
- Satiety, glycemic effects.
- High protein diets and loss of fat vs muscle.
- There is a role for eggs in weight loss and in weight maintenance programs.



EGGS & SATIETY

	Egg Breakfast (17)	Bagel Breakfast (17)	% Change	P Value
Satiety at 3 hr (1-6)	4.5 ± 1.3	2.4 ± 0.6	+ 88%	<0.00001
Lunch intake (kcal)	560 ± 142	704 ± 110	- 21%	<0.0002

Total caloric decrease over 24 hrs = 430 kcal.

Abstract presented at NAASO 2004.

PROTEIN & WEIGHT LOSS

Diet	<u>High-CHO</u>	<u>High-Protein</u>
P:F:C (% cal)	15:30:55	30:30:40
Wt loss	15.3 lbs	16.6 lbs
Muscle loss	2.8 lbs	1.7 lbs
Fat loss	10.4 lbs	12.3 lbs

24 overweight women on 1700 calorie diets for 10 wks. U Illinois

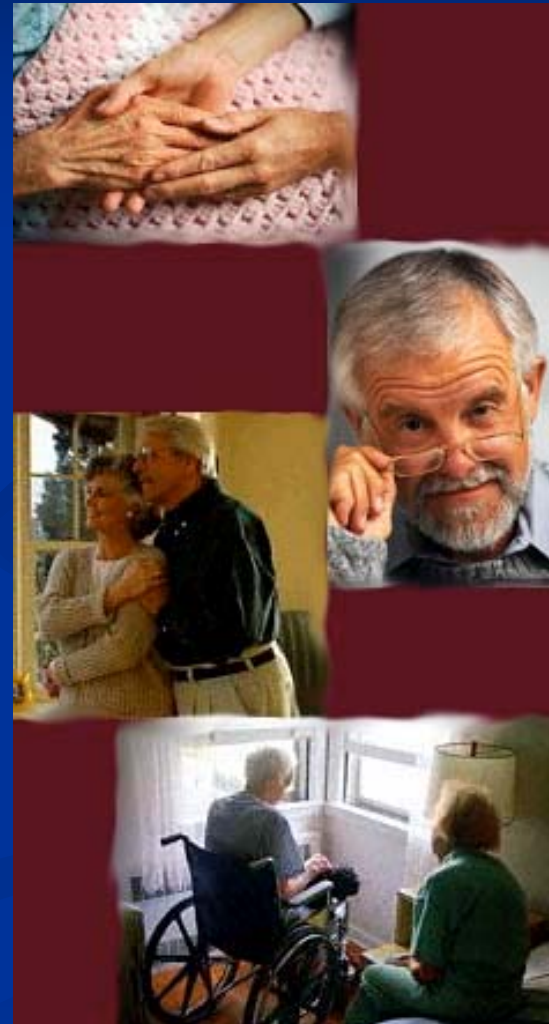
NUTRITION FOR CHILDREN

- Nutritional variety
- High quality protein for growth
- Balance calories in and calories out
- Importance of breakfast for school performance
- Food and family/culture (Hispanic population egg consumers and growing segment of population)



NUTRITION & SENIORS

- May require more protein per kg than younger adults.
- Eggs least expensive source of high quality protein.
- Nutrient dense foods important as caloric intake decreases.
- Eggs are easy to cook, chew, and digest.



PARADIGM SHIFT

- Away from 'removing negative ingredients' (e.g. cholesterol, fat, salt)
- To 'enhanced with positive ingredients' (e.g. antioxidants, vitamins, calcium)
- Define 'functional' eggs by newly recognized and beneficial nutrients.

FUNCTIONAL EGGS

- Choline
- Lutein – Zeaxanthin
- Omega-3 fatty acid
- Conjugated linolenic acid [CLA]
- Vitamins E, D and K
- B Vitamins
- Selenium
- Antibodies



CHOLINE & FETUS/ NEWBORN

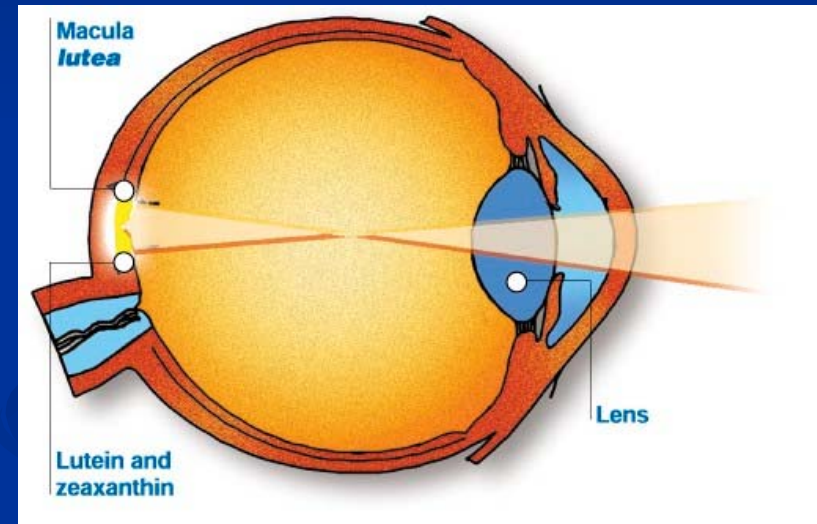
- Choline an essential nutrient
 - AI for men 550 mg/day
 - AI for women 425 mg/day
- Increased needs during pregnancy & lactation
- Choline supplements
 - increased new neurons
 - formation of memory centers
 - decreased programmed cell death
 - life-long changes in nerve growth factors



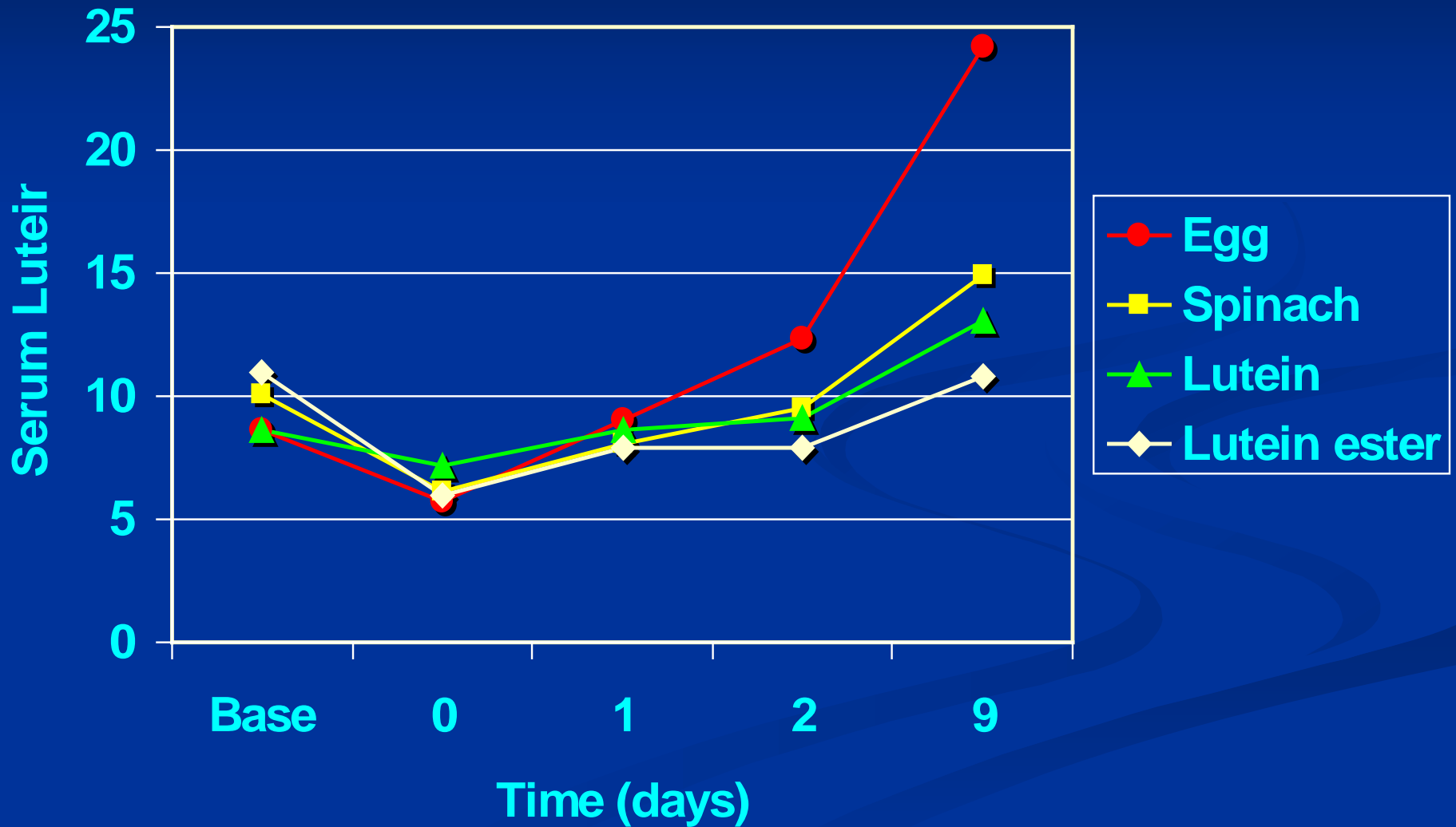
LUTEIN & ZEAXANTHIN



- Large intakes of lutein and zeaxanthin related to lower risk of AMD and cataracts.
- Egg feeding increases plasma levels of lutein and zeaxanthin.
- Egg feeding increases macular pigment density.

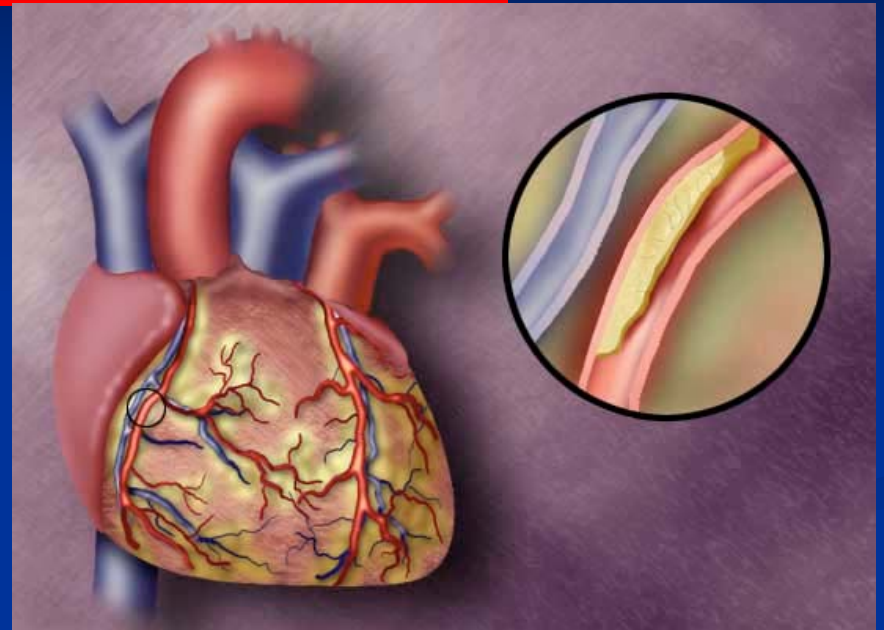


LUTEIN BIOAVAILABILITY



LUTEIN & ATHEROSCLEROSIS

- Lutein as an antioxidant/anti-inflammatory
- IMT progression low in those with high plasma lutein
- High lutein intake decreased atherosclerosis in animal model
- Lutein effects on inflammatory responses



Are eggs associated with CVD?

“Short term egg consumption does not adversely affect endothelial function in healthy adults, supporting the view that dietary cholesterol may be less detrimental to cardiovascular health than previously thought.”

[Katz et al. Int J Cardio 2004]

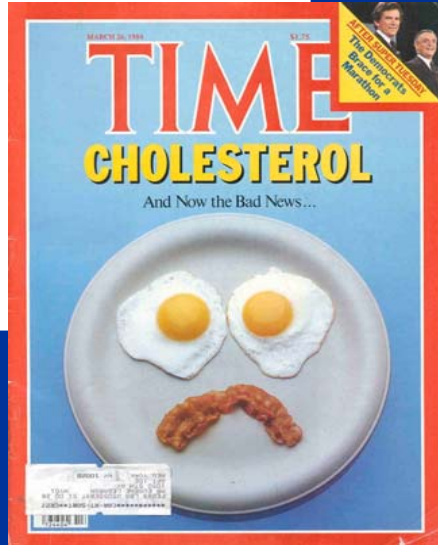
Are eggs associated with CVD?

“Because LDL peak diameter was not decreased and the larger LDL-1 subclass was greater in hyperresponders following egg intake, these data indicate that the consumption of a high cholesterol diet does not negatively influence the atherogenicity of the LDL particle.”

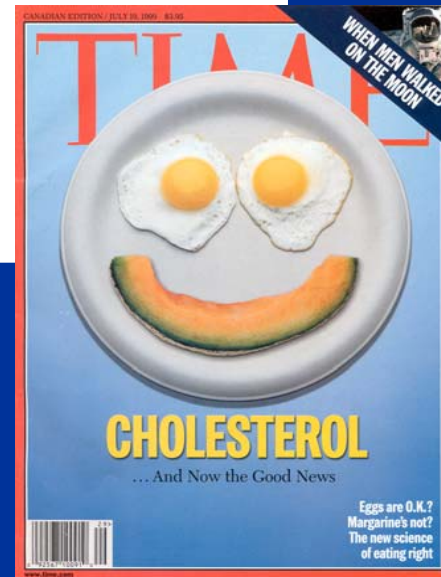
Herron et. al, *Metabolism*, 2004.

DEATH OF AN ICON

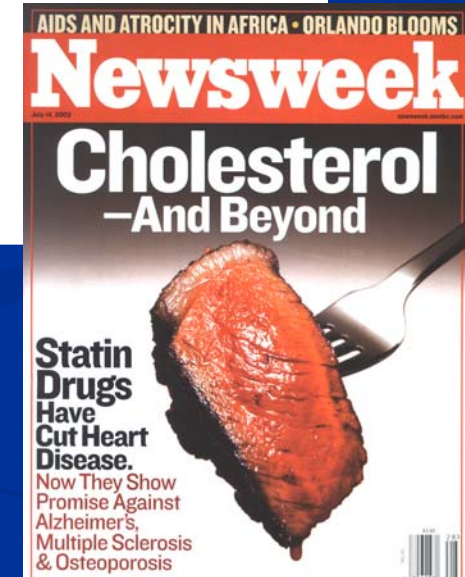
1984



1999



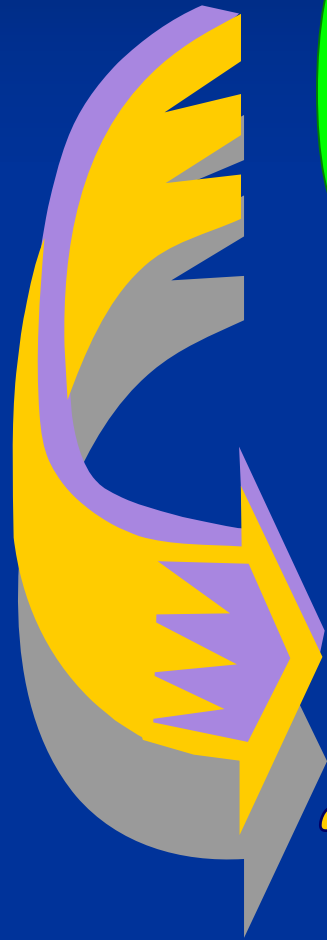
2003



Eggs are no longer the icon for cholesterol!

EGGS COME FULL CIRCLE

—070450—050



Good Food

Bad Food



—v a — 3 e

INFORMATION & MATERIALS

- **Egg Nutrition Center**

www.enc-online.org



- **American Egg Board**

www.aeb.org



- **United Egg Producers**

www.unitedegg.com



