Myths and Misinformation About Saturated Fat and Cholesterol: How Bad Science and Big Business Created the Obesity Epidemic

David Diamond, Ph.D.

Departments of Psychology, Molecular Pharmacology and Physiology, University of South Florida and
Research and Development Service, J.A. Haley Veterans Hospital

Bad News: Abnormal Blood Lipids

<table>
<thead>
<tr>
<th>Year</th>
<th>Triglycerides (mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>800</td>
</tr>
<tr>
<td>2006</td>
<td>700</td>
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<tr>
<td>2007</td>
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<tr>
<td>2008</td>
<td>500</td>
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<tr>
<td>2009</td>
<td>400</td>
</tr>
<tr>
<td>2010</td>
<td>300</td>
</tr>
<tr>
<td>2011</td>
<td>200</td>
</tr>
<tr>
<td>2012</td>
<td>Heart Disease Risk</td>
</tr>
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Years
Bad News: Abnormal Blood Lipids

Total/HDL

<table>
<thead>
<tr>
<th>Year</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>5.0</td>
<td>6.0</td>
<td>6.5</td>
<td>7.0</td>
<td>6.5</td>
<td>6.0</td>
<td>5.5</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Heart Disease Risk

The Solution: Diet Changes and Exercise

Total/HDL

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<tr>
<th>Year</th>
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</tr>
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Heart Disease Risk
Diet
Skinless Chicken, Low Fat Foods (Cheese, Yogurt), Olive Oil, Bread, Vegetables, Fruit, Nuts, Cereal, Potatoes

Years

Total/HDL

2005 2006 2007 2008 2009 2010 2011 2012

Heart Disease Risk

4.5 5.0 5.5 6.0 6.5 7.0

X

Heart Disease Risk

4.5 5.0 5.5 6.0 6.5 7.0

Years
Diet
Skinless Chicken, Low Fat Foods (Cheese, Yogurt), Olive Oil, Bread, Vegetables, Fruit, Nuts, Cereal, Potatoes

Heart Disease Risk

Total/HDL

2005 2006 2007 2008 2009 2010 2011 2012

Really Scary News

Triglycerides (mg/dl)

2005 2006 2007 2008 2009 2010 2011 2012
Really Scary News

Obesity and Heart Disease in My Future

![Graph showing Total/HDL levels from 2005 to 2012 with an increasing trend from 2007 onwards.](image1)

![Graph showing body weight from 2005 to 2012 with an increasing trend from 2007 onwards.](image2)
Myths and Misinformation:

Myth #1: Consumption of food high in saturated fat and cholesterol (beef, butter) makes people fat and causes heart disease.
Myths and Misinformation:

Myth #1:
Consumption of food high in saturated fat and cholesterol (beef, butter) makes people fat and causes heart disease

Myth #2:
- Cholesterol clogs arteries and causes heart disease -
You will live longer if you take medication to lower your cholesterol

Misinformation:
Food and Drug Company-Supported Research and the government have provided incorrect recommendations on ideal sources of food for optimal health – we have been misled
Historical Perspective on Diet, Obesity and Health (1864 - Present)

5’5” >200 lbs
Obesity-related health problems

William Banting
(1797 – 1878)
His doctor (Dr. William Harvey) prescribed a low carbohydrate diet:
- Unlimited consumption of meat
- No potatoes, bread or sugar

William Banting lost 46 lbs, enjoyed great health, and lived into his 80’s.
(no clogged arteries!)
An obese person may be given a diet of meat, excluding bread and potatoes, and the patient will reduce to his normal weight. As soon as the patient returns to his diet of bread and potatoes, he straightaway begins to increase in weight.
TREATMENT OF OBESITY: DEVELOPMENTS OF THE PAST 150 YEARS
A. W. PENNINGTON, M. D.
Amer. Jour. Dig. Dis.
March, 1954

Breakfast, lunch and dinner are all the same type—you eat three big meals a day:
First course of each meal: One-half pound or more of fresh meat with the fat. This part of the diet is unlimited. You can eat as much as you want. The proper proportion is three parts of lean to one part fat, cooked weight. Most of the meat you buy is not fat enough, so get extra beef kidney fat, slice and fry it to make up the proper proportion. Good meats are roast beef, steak, roast lamb or mutton, lamb or mutton chops, boiled beef or boiled breast of lamb, fresh pork and pork chops.
A New Concept in the Treatment of Obesity

Edgar S. Corson, MD, Marshall Goldberg, MD, and Grace J. Chap, BS, Madison, Wis.

The diet has been planned around the basic concept that its carbohydrate content should be low.

Note: This diet contains no bread, flour, sugar, salt or alcohol.
Eat Meat (fat): Lose weight
But is it a healthy diet?

Does eating red meat, full fat cheese, butter and eggs increase serum cholesterol?
Long term effects of ketogenic diet in obese subjects with high cholesterol level

Hussein M. Dashti,1 Naji S. Al-Zaid,2 Thazhumpal C. Mathew,3
Mahdi Al-Mousawi,4 Hussain Talib,4 Sami K. Asfar1
and Abdulla I. Behbahani1


**Table 1. Recommended and restricted food in ketogenic diet**

<table>
<thead>
<tr>
<th>Proteins</th>
<th>Vegetables/Fruits</th>
<th>Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Fish</em>: Tuna, Surfline Prawns, Shrimps, Lobster</td>
<td>Spinach, Watercress, Eggplant, Parsley, Mulberry, Coriander, Mint, Artichoke, Okra, Cabbage, Mushroom, Avocado, Leek, Carrot, Radish, Celery, Cauliflower, Green pepper, Lettuce, Cucumber, Tomato, 10–15 olives/day, Lemon</td>
<td>Olive oil (5 tablespoon, added to the salad)</td>
</tr>
<tr>
<td><em>Meat</em>: Kababs, Sausages, Minced</td>
<td>Strawberry-6/day, Avocado</td>
<td>Flax seed oil</td>
</tr>
<tr>
<td><em>Poultry</em>: Chicken, Eggs</td>
<td>Berries-10/day</td>
<td></td>
</tr>
<tr>
<td><em>Cheese</em>: Full fat cheese</td>
<td></td>
<td></td>
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**Fully restricted food**

<table>
<thead>
<tr>
<th>Carbohydrates</th>
<th>Fruits/drinks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flour, Potato, Macaroni Spaghetti, Noodles, Bread, Rice, Sugar, Sweets, Honey, Cakes</td>
<td>All fruit juices</td>
</tr>
<tr>
<td></td>
<td>All soft drinks</td>
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Long term effects of ketogenic diet in obese subjects with high cholesterol level

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Low Carb Diet (unlimited red meat):
Lose Weight and Lower Cholesterol!

If a low carb diet reduces serum cholesterol, will a high carb diet (sugar) increase serum cholesterol?
Dietary Sugar in the Production of Hyperglyceridemia

My Diet (2007 – Present)
Eggs, Butter, Beef, Chicken (with the skin), Full Fat Cheese, Coconut, Dark Chocolate, Nuts and Vegetables (Broccoli)
Small Quantities of Fruit, Bread, Potatoes and Sugar

Triglycerides (mg/dl)

Cholesterol (mg/dl)

Normal Diet
No Sugar
+ Sugar
No Sugar

Weeks

Triglycerides (mg/dl)

Cholesterol (mg/dl)

Heart Disease Risk

Low Carb Diet

Years
My Diet (2007 – Present)
Eggs, Butter, Beef, Chicken (with the skin), Full Fat Cheese, Coconut,
Dark Chocolate, Nuts and Vegetables (Broccoli)
Small Quantities of Fruit, Bread, Potatoes and Sugar

Triglycerides (mg/dl)

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<tbody>
<tr>
<td></td>
<td>70%</td>
<td>50%</td>
<td>30%</td>
<td>10%</td>
<td></td>
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Heart Disease Risk

70% Fat
20% Protein
10% Carbs

Low Carb Diet

My Diet (2007 – Present)
Eggs, Butter, Beef, Chicken (with the skin), Full Fat Cheese, Coconut,
Dark Chocolate, Nuts and Vegetables (Broccoli)
Small Quantities of Fruit, Bread, Potatoes and Sugar

Total/HDL

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<tr>
<td></td>
<td>7.0</td>
<td>6.5</td>
<td>6.0</td>
<td>5.5</td>
<td>5.0</td>
<td>4.5</td>
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<td></td>
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Heart Disease Risk

70% Fat
20% Protein
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Low Carb Diet
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Eggs, Butter, Beef, Chicken (with the skin), Full Fat Cheese, Coconut,
Dark Chocolate, Nuts and Vegetables (Broccoli)
Small Quantities of Fruit, Bread, Potatoes and Sugar

70% Fat
20% Protein
10% Carbs

Body Weight
(lb)

2005 2006 2007 2008 2009 2010 2011 2012

0 145 150 155 160 165 170 175

Low Carb Diet

weight in 1980

Our Current State of Confusion

"Check today’s paper. Are eggs now safe to eat,
or should we continue to avoid them like the plague?"
American Heart Association

The American Heart Association (AHA) also recommends eating no more than five ounces of lean meat, poultry or fish per day, and using low-fat and skim/fat-free dairy products.

The New England Journal of Medicine

SYMPOSIUM ON OBESITY

A REORIENTATION ON OBESITY

Alfred W. Pennington, M.D.

Breakfast, lunch and dinner are all the same type—you eat three big meals a day:

First course of each meal: One-half pound or more of fresh meat with the fat. This part of the diet is unlimited. You can eat as much as you want. The proper proportion is three parts of lean to one part fat, cooked weight. Most of the meat you buy is not fat enough, so get extra beef kidney fat, slice and fry it to make up the proper proportion. Good meats are roast beef, steak, roast lamb or mutton, lamb or mutton chops, boiled beef or boiled breast of lamb, fresh pork and pork chops.
Consequences of the Fat Phobia

Excess Consumption of Carbs

Figure 13a. Average daily U.S. intake of carbohydrates, fat and protein between 1970-2000.

- Carbohydrates
- Fats
- Protein
Simple Message to the Obese: Stop the Vilification of the Atkins Diet
It’s ok to eat meat, lose weight!

Eat Less Carbs:
Less Potatoes, Bread and Anything Sweet
Myths and Misinformation:

Myth #1:
Consumption of food high in saturated fat and cholesterol (beef, butter) makes people fat and causes heart disease.
How Did Food Recommendations Go Awry?

Deaths from Cardiovascular Disease

Deaths from Cardiovascular Disease

Lloyd-Jones et al, 2010. *Circulation*

‘There is a remarkable relationship between death rate from heart disease and the proportion of fat calories in the national diet’

Keys (1953). *Journal of the Mount Sinai Hospital New York*
Ancel Keys cheated - He selected data from 6 countries to create the linear relationship. Data were actually available from a total of 22 countries!

Keys (1953). *Journal of the Mount Sinai Hospital New York*

**Fat in the Diet and Mortality from Heart Disease**

J. WISHNASHALY, PH.D., BERKELEY, CALIFORNIA, AND HERMAN H. HILDEBORG, M.D.,

ALBANY, NEW YORK


Since no information is given by Keys on how or why the six countries were selected for Fig. 1, it is necessary to investigate the association between dietary fat and heart disease mortality in all countries for which information is available.
**Fat in the Diet and Mortality from Heart Disease**

J. Yerushalmy, Ph.D., Berkeley, California, and Herman R. Hillgreen, M.D., Albany, New York


No Significant Relation Between Fat Consumption and Heart Disease Mortality ($r^2=0.1, p > 0.05$)

Significant Relation Between Sugar Consumption and Heart Disease Mortality ($r^2=0.41, p < 0.05$)
“A generation of citizens has grown up since the Diet/Heart Hypothesis was launched as official dogma. They have been misled by the greatest scientific deception of our times: the notion that consumption of animal fat causes heart disease.”

“Coronary Heart Disease – Doing the Wrong Things”
Nutrition Today (July, 1985)

George Mann, Sc.D., M.D.
Professor, Nutritional Biochemist,
Vanderbilt University
Associate Director of the Framingham Study

Dietary Fat and Coronary Heart Disease: Summary of Evidence from Prospective Cohort and Randomised Controlled Trials
Intake of total fat was not significantly associated with coronary events (heart attacks) or mortality.

Intake of saturated fat (animal fat) was not significantly associated with coronary events or mortality.

Fatal heart disease was not reduced by low-fat diets or by replacing saturated (animal) fats with polyunsaturated (vegetable) fats.

Walter Willett, M.D.
Chair, Department of Nutrition
Harvard School of Public Health

“Data on nearly 300,000 individuals ... clearly contradict the low-fat-is-good-health message ... the exclusive focus on adverse effects of fat may have contributed to the obesity epidemic.”
Ancel Keys – Created the Artificial Link Between Fat and CHD
Became Editor of *Circulation*
on the cover of Time Magazine, January, 1961

In 1977, a Senate Committee led by George McGovern released its "Dietary Goals for the United States." Without any evidence to support their conclusions, the committee identified fat as the culprit causing obesity.
The President of the US National Academy of Sciences, Dr. Philip Handler, an expert on metabolism, referred to McGovern’s “Dietary Goals” as “nonsense.”

Steak for Dinner, Angioplasty for Dessert?
The Myth That Cholesterol Clogs Arteries

I’m from the cholesterol police and I’d like a word with you.
“Thanks solely to “Madison Avenue” promotion by commercial food producers and the American Heart Association, a great many people imagine that if they lower their blood cholesterol ... they will prevent heart disease... Few people realize that there has never been a proven, scientific relationship between lowering blood cholesterol levels and preventing heart disease”

The Cholesterol Controversy, 1973
by Edward Pinckney, M.D.
Editor of Journal of the American Medical Association
"An almost endless number of observations and experiments have effectively falsified the hypothesis that dietary cholesterol and fats, and a high cholesterol play a role in the causation of atherosclerosis and cardiovascular disease. The hypothesis is maintained because allegedly supportive, but insignificant findings, are inflated and most contradictory results are ignored."

A hypothesis out-of-date: The diet-heart idea by Uffe Ravnskov, M.D., Ph.D.
Journal of Clinical Epidemiology, 55:1057-1063, 2002

The Lipid Research Clinics Coronary Primary Prevention Trial Results
I. Reduction in Incidence of Coronary Heart Disease
JAMA, Jan 20, 1984—Vol 251, No. 3
The Lipid Research Clinics Coronary Primary Prevention Trial Results

1. Reduction in Incidence of Coronary Heart Disease

- of 480,000 men, screened the top 5% in cholesterol level (290 mg/dl) to be in the study -followed for 7.4 years, treated with cholestyramine or placebo

24% reduction in heart disease-related deaths!

The risk of death from all causes was not significantly reduced in the cholestyramine group.
### The Lipid Research Clinics Coronary Primary Prevention Trial Results

#### I. Reduction in Incidence of Coronary Heart Disease

**JAMA. Jan 20, 1984—Vol 251, No. 3**

**Start: 480,000 men**

<table>
<thead>
<tr>
<th>End Point</th>
<th>Placebo (N=1,000)</th>
<th>Cholestyramine Resin (N=1,006)</th>
<th>% Reduction in Risk*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definite coronary heart disease (CHD) death and/or definite nonfatal myocardial infarction</td>
<td>1871 9.8</td>
<td>1551 8.1</td>
<td>19%</td>
</tr>
<tr>
<td>Definite CHD death</td>
<td>38 2.0</td>
<td>30 1.6</td>
<td>24%</td>
</tr>
<tr>
<td>Definite nonfatal myocardial infarction</td>
<td>153 8.3</td>
<td>130 6.8</td>
<td>19%</td>
</tr>
<tr>
<td>Definite or suspect CHD death or nonfatal myocardial infarction</td>
<td>2561 13.5</td>
<td>2221 11.8</td>
<td>16%</td>
</tr>
<tr>
<td>Definite or suspect CHD death</td>
<td>44 2.3</td>
<td>32 1.7</td>
<td>30%</td>
</tr>
<tr>
<td>Definite or suspect nonfatal myocardial infarction</td>
<td>225 11.8</td>
<td>195 10.2</td>
<td>15%</td>
</tr>
<tr>
<td>All-cause mortality</td>
<td>71 3.7</td>
<td>68 3.8</td>
<td>7%</td>
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**Notes:**
- *(Placebo) vs (Treated) Survived*
### The Lipid Research Clinics Coronary Primary Prevention Trial Results

#### I. Reduction in Incidence of Coronary Heart Disease

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<td>Definite coronary heart disease (CHD) death and/or definite nonfatal myocardial infarction</td>
<td>187†</td>
<td>9.8</td>
<td>155†</td>
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<td>38</td>
<td>2.0</td>
<td>30</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definite or suspect CHD death or nonfatal myocardial infarction</td>
<td>256†</td>
<td>13.5</td>
<td>222†</td>
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<td>71</td>
<td>3.7</td>
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96.3% (Placebo) vs 96.4% (Treated) Survived

---

**The $120 Million Study That Produced a Non-Significant Treatment Difference of 3 People!**

The treatment difference of 3 people translates to a risk reduction of 0.1%.
The Drug Trial Failed Miserably – Lowering Cholesterol Had no Significant Effect on Mortality

The Lead Investigators Declared Victory – Predicting Heart Disease Would Be Eradicated With Drugs
NCEP Report

Implications of Recent Clinical Trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines

Scott M. Grundy; James I. Cleeman; C. Noel Bairey Merz; H. Bryan Brewer, Jr; Luther T. Clark; Donald B. Hummrichake®; Richard C. Pasternak; Sidney C. Smith, Jr; Neil J. Stone;
for the Coordinating Committee of the National Cholesterol Education Program

*Endorsed by the National Heart, Lung, and Blood Institute, American College of Cardiology Foundation, and American Heart Association (Circulation. 2004;110:227-239.)*

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The American Heart Association endorses the National Cholesterol Education Program (NCEP) guidelines for detection of high cholesterol.

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<td>200 to 239 mg/dL</td>
<td>Borderline high</td>
</tr>
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<td>240 mg/dL and above</td>
<td>High blood cholesterol. A person with this level has more than twice the risk of coronary heart disease as someone whose cholesterol is below 200 mg/dL.</td>
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American Heart Association

*Learn and Live*
“No sensible person can avoid the conclusion that the NCEP is an expensive fraud perpetuated by avaricious business enterprises and dishonest scientists.”

George Mann, Sc.D., M.D.
Professor, Nutritional Biochemist,
Vanderbilt University

NCEP Report

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The Missing Conflict of Interest Statement
Dr. Grundy has received honoraria from Merck, Pfizer, Sankyo, Bayer, Merck/Schering-Plough, Kos, Abbott, Bristol-Myers Squibb, and AstraZeneca; and research grants from Merck, Abbott, and GlaxoSmithKline.

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$150,000/drug company x 10 = $1,500,000/year!
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These guidelines were developed by people with a financial conflict of interest.
The American Heart Association endorses the National Cholesterol Education Program (NCEP) guidelines for detection of high cholesterol.

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American Heart Association

Are they wrong?

A Different Opinion From Scientists Unsupported by the Statin Industry

Annals of Internal Medicine

Narrative Review: Lack of Evidence for Recommended Low-Density Lipoprotein Treatment Targets: A Solvable Problem

Rodney A. Hayward, MD; Timothy P. Heller, MD, MS; and Sandeep Vilain, MD, MS. Ann Intern Med. 2006;145:520-530.

**Discussion**

In this review, we found no high-quality clinical evidence to support currently proposed treatment goals for LDL cholesterol. However, we conclude that there are no intrinsic barriers to producing such evidence. For example:

We could find no published high-quality clinical evidence supporting cessation of lipid therapy based on proposed LDL cholesterol targets. However, the errors in previous examinations of this issue appear to be avoidable. We strongly suggest that those with access to these data conduct further analyses to provide more valid evidence on this important clinical and scientific question.

From the Department of Veteran Affairs, VA Center for Practice Management and Outcomes Research, VA Ann Arbor Healthcare System, and University of Michigan School of Medicine and Public Health, Ann Arbor, Michigan.

Acknowledgments: The authors thank Robert Chang, MD, for assistance with the literature review and David Kent, MD, MS, for reviewing an earlier draft of this manuscript.

Grant Support: By the VA Health Services Research and Development Service's Quality Enhancement Research Initiative (QUERI: DIB 98-001) and by the National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health (5T32DK07573).
PETITION TO THE NATIONAL INSTITUTES OF HEALTH
SEEKING AN INDEPENDENT REVIEW PANEL TO RE-EVALUATE
THE NATIONAL CHOLESTEROL EDUCATION PROGRAM GUIDELINES

September 23, 2004

Dr. Elias Zerhouni
Director, National Institutes of Health

Dr. Barbara Alving
Acting Director, National Heart, Lung and Blood Institute

Dr. James L. Cleeman
Director, National Cholesterol Education Program

Dear Sirs and Madam,

On July 12, 2004, the National Cholesterol Education Program of the National Heart, Lung and Blood Institute issued updated recommendations for “cholesterol management” based on five studies released since the 2001 update of treatment guidelines.

The American people are poorly served when government-sanctioned clinical recommendations, uncritically amplified by the media, misdirect attention and resources to expensive medical therapies that may not be scientifically justified. Only an independent review, totally free from conflicts of interest, can restore public confidence by determining if that has happened in this case. We therefore request that you move expeditiously to appoint such a panel and provide it with the resources needed to conduct the review.

Sincerely,
John Abramson, MD  
Clinical Instructor  
Primary Care  
Harvard Medical School

R. James Barnard, PhD  
Professor  
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DEPARTMENT OF HEALTH & HUMAN SERVICES  
National Institutes of Health  
National Heart, Lung, and Blood Institute  
Baltimore, Maryland 20892

October 22, 2004

Mr. Merril Gozzer  
Director, Integrity in Science  
Center for Science in the Public Interest  
1875 Connecticut Avenue, NW, Suite 300  
Washington, D.C.  20009-5728

Dear Mr. Gozzer:

I am responding to the letter of September 23 addressed to Dr. Zerhouni, Director, National Institutes of Health, myself, and Dr. Cleeman, which was submitted by you for the signatories. The letter questions the validity of current Adult Treatment Panel III (ATP III) recommendations for cholesterol management developed by the National Cholesterol Education Program (NCEP) and requests that NCEP conduct a re-review of the data in the studies at issue.
Mr. Merrill Gozner  
Director, Integrity in Science  
Center for Science in the Public Interest  
1875 Connecticut Avenue, NW, Suite 300  
Washington, D.C. 20009-5728

Dear Mr. Gozner,

I am responding to the letter of September 23 addressed to Dr. Zerhouni, Director, National Institutes of Health, myself, and Dr. Cleeman, which was submitted by you for the signatures. The letter questions the validity of current Adult Treatment Panel III (ATP III) recommendations for cholesterol management developed by the National Cholesterol Education Program (NCEP) and requests that NCEP conduct a re-review of the data in the studies at issue.

The Institute does not believe a re-review of the data is warranted at this time.

Sincerely,

/s/  
Barbara Alving, M.D.  
Acting Director

---

The American Heart Association endorses the National Cholesterol Education Program (NCEP) guidelines for detection of high cholesterol.

<table>
<thead>
<tr>
<th>Total Cholesterol Level</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 200 mg/dL</td>
<td>Desirable level that puts you at lower risk for coronary heart disease. A cholesterol level of 200 mg/dL or higher raises your risk.</td>
</tr>
<tr>
<td>200 to 239 mg/dL</td>
<td>Borderline high</td>
</tr>
<tr>
<td>240 mg/dL and above</td>
<td>High blood cholesterol. A person with this level has more than twice the risk of coronary heart disease as someone whose cholesterol is below 200 mg/dL.</td>
</tr>
</tbody>
</table>

*These guidelines were developed by people with a financial conflict of interest.**These guidelines have been disputed by scientists without a conflict of interest.
Isn’t there a benefit from statins in the reduction of cardiac events?
Isn’t there a benefit from statins in the reduction of cardiac events?

"What if you put 250 people in a room and told them they would each pay $1,000 a year for a drug they would have to take every day, that many would get diarrhea and muscle pain, and that 249 would have no benefit?"

Jerome R. Hoffman, M.D.
Professor of Clinical Medicine,
UCLA School of Medicine

Adverse Side Effects of Statins
Adverse Side Effects of Statins: Erectile Dysfunction, Type 2 Diabetes, Rhabdomyolysis, Acute Renal Failure, Cancer and Liver Dysfunction

Men treated with hypolipidaemic drugs complain more frequently of erectile dysfunction

E. Becket MD, P. Girod MD, H. M. Hoehmati MD and C. Turpin MD
Service d’Endocrinologie-Métabolisme, Hôpital de la Pitié-Salpêtrière, Paris, France

Statin Therapy and Risk of Developing Type 2 Diabetes: A Meta-Analysis

Unintended effects of statins in men and women in England and Wales: population based cohort study using the QResearch database

BMJ

Effect of the Magnitude of Lipid Lowering on Risk of Elevated Liver Enzymes, Rhabdomyolysis, and Cancer

Insights From Large Randomized Statin Trials

Vol. 30, No. 5, 2007

Final 2 Issues:

What Caused the Increase in Deaths from Cardiovascular Disease in the 20th Century?

How is Cholesterol Involved in Heart Disease? Villain or Misunderstood Hero?
Does Butter or Saturated Fat Consumption Parallel the Increase in Heart Disease-Related Death?

Lloyd-Jones et al, 2010. *Circulation*
No Relation of Saturated Fat Consumption to Heart Disease

Deaths from Cardiovascular Disease

20-Year Lag Time Between Smoking and Lung Cancer
What Causes Coronary Heart Disease?

- Tear in artery wall
- Macrophage cell
- Cholesterol deposits
- Red blood cell
- Macrophage foam cell
- Fat deposits

Sugar

Clear Relation of Smoking to Heart Disease

Deaths from Cardiovascular Disease

20-Year Lag Time Between Smoking and Lung Cancer
What Causes Coronary Heart Disease?

- Tear in artery wall
- Macrophage cell
- Cholesterol deposits
- Red blood cell
- Macrophage foam cell
- Fat deposits
What Causes Coronary Heart Disease?

Thickening of the Artery Wall Following Repeated Injury and Repair
Myths and Misinformation:

Myth #1: Consumption of food high in saturated fat and cholesterol (beef, butter) makes people fat and causes heart disease
**Myths and Misinformation:**

- **Myth #1:** Consumption of food high in saturated fat and cholesterol (beef, butter) makes people fat and causes heart disease

- **Myth #2:** Cholesterol clogs arteries and causes heart disease - You will live longer if you take medication to lower your cholesterol
**Myths and Misinformation:**

**Myth #1:** Consumption of food high in saturated fat and cholesterol (beef, butter) makes people fat and causes heart disease

**Misinformation:** We have been misled

**Myth #2:** Cholesterol clogs arteries and causes heart disease - You will live longer if you take medication to lower your cholesterol

---

**The Bittersweet End Of Humans as Hunters**
My Mentors

Anthony Colpo

Gary Taubes

Barry Groves

Paul Rosch, M.D.
Rodney Hayward, M.D.
Joel Kaufman, Ph.D.
Walter Willett, M.D., Ph.D.
Uffe Ravnskoff, M.D., Ph.D.
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Jean Anthelme Brillat-Savarin
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Edward R. Pinckney, M.D. and Cathey Pinckney
Sally Fallon and Mary G. Enig, Ph.D.

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Walter Willett, M.D.
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Bruce Fife, C.N., N.D.
William Rothstein, Ph.D.
Michael F. Oliver, M.D.

Are there any questions?