creased in the patients, as compared with the controls, in the fasting state and was incompletely suppressed at ~100 μU per milliliter in the patients only. These patterns of glucose production and utilization were not significantly modified after portosystemic surgical shunt (Fig. 1).

These results suggest (1) that surgical shunt seems not to influence the degree and the pattern (receptorial and post-binding) of insulin resistance or the degree of hepatocellular damage, and (2) that hyperinsulinism in liver cirrhosis seems to be mainly related to hepatocellular damage.

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## SPECIFIC BINDING SITES FOR ATRIAL NATRIURETIC FACTOR IN THE HUMAN KIDNEY

*To the Editor:* Several atrial natriuretic factors (ANFs) have been identified in the mammalian atria and have been shown to possess potent natriuretic, diuretic, and vasorelaxant activities in several species.[1] Previous studies have demonstrated that ANF-like immunoreactivity is present in the human right atrium,[2] and the gene encoding the human ANF (hANF) has been identified.[3] However, specific binding sites for hANF and the physiologic response that occurs upon activation of these ANF binding sites has yet to be elucidated in human beings. We have studied the distribution of specific ANF binding sites in the human kidney. This distribution is the same as in other species,[4] and these ANF binding sites are stable in postmortem material. We present evidence that ANF binding sites can be readily detected in human postmortem tissue. Consequently, it should be possible to determine whether ANF receptors are altered in essential hypertension and in other relevant pathologic conditions.

Kidneys were obtained post mortem from a 57-year-old man who died of a myocardial infarction, a 61-year-old man who died of a cerebral aneurysm, and a 27-year-old man who died of a head injury. The tissue was obtained 12 hours, 60 hours, and 65 hours after death, respectively. To identify and localize specific ANF binding sites in the kidney, we used $^{125}$I-hANF$_{1-28}$ (a gift from Amersham Corporation) as the radioligand and a previously described receptor autoradiographic protocol that we have employed successfully elsewhere.[4] High concentrations of specific hANF binding sites were present in the glomerular apparatus, collecting tubules, and renal arteries. These results are nearly identical to those obtained with use of the same ligand in the guinea pig kidney. Thus, ANF binding sites appear to be relatively well conserved in mammals, and furthermore, specific ANF binding sites are stable in human postmortem kidneys. These results suggest that, at least in the kidney, the physiologic actions of ANF in human beings may be the same as those observed in laboratory animals. Determining the levels and location of hANF binding sites in human postmortem kidneys may allow an assessment of ANF receptor dysfunction in disease states such as hypertension.

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## CIGARETTE ADVERTISING AND MEDIA COVERAGE OF SMOKING AND HEALTH

*To the Editor:* The article by Warner on smoking and advertising (Feb. 7 issue)[1] correctly points out the news media's blatant disregard for truth regarding the hazards of cigarette use in exchange for huge revenues from tobacco advertising. But as a physician in private practice, I am offended by Dr. Warner's erroneous assumption that physicians have not been at the forefront in combating the cigarette problem. In his article, for example, Warner fails to make reference to the December 1983 issue of the *New York State Journal of Medicine* (published by physicians for physicians), which has become the most authoritative reference on the cigarette pandemic ever published in the United States.[2,3] That issue is devoted entirely to the health, economic, and political issues of tobacco use in the United States and is replete with references to cigarette advertising.

Warner suggests a boycott of magazines that accept cigarette advertising and encourages physicians to remove such magazines from their office waiting rooms. Such action has been a theme of Doctors Ought to Care (DOC) since its incorporation in 1977. For Dr. Warner to accuse the medical profession of participating in a "conspiracy of silence," without recognizing the members of DOC, many of whom have made virtually a full-time job of counteracting the tobacco industry, is an injustice. Physicians in private practice, unlike academicians, seldom receive funding to assist them in counteracting the $1.5 billion advertising budget of the tobacco industry. Many physician members of DOC have taken time from their office practices on hundreds of occasions to speak to students, lay groups, professional organizations, medical students, and residents at their own expense.

Physicians in Illinois have been at the forefront of efforts to pass antismoking legislation, which includes measures to restrict smoking in public places, increase the state excise tax on tobacco, and require cigarette companies to produce a fire-safe cigarette. Physicians from several medical schools and such professional organizations as the Illinois State Medical Society and the Illinois Academy of Family Practice have testified on numerous occasions about this legislation. At the encouragement of Ron Davis, M.D., currently the resident physician member of the Board of Trustees of the American Medical Association, the Illinois State Medical Society adopted a resolution in 1979 to "encourage passage of legislation to ban all cigarette advertisements and to encourage anti-smoking campaigns in the media."

Although I do not suggest that physicians have done enough as a group to counteract the smoking problem in this country, Dr. Warner's failure to make at least passing reference to the many physicians who have loudly and vigorously opposed cigarette smoking and cigarette advertising truly points the finger in the wrong direction.

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*To the Editor:* Dr. Warner has performed a great service in calling attention to the evil and persuasive control of the news media by the cigarette companies. Relatively few physicians have explored and publicized the political and economic stranglehold of the tobacco industry on this nation. Another person who has pioneered in this regard is Dr. Alan Blum, current editor of the *New York State Journal of Medicine*. As a resident in family practice at the University of Miami School of Medicine in the mid-1970s, he organized DOC (Doctors Ought to Care), which made anticigarette-advertising "house calls" on the moguls of news publishing. Under his leadership, the *New York State Journal of Medicine* has produced an entire issue dealing with this medical, political, and economic issues of the tobacco scourge.*

My suggestion is that editors of all medical journals engage in a spirited contest to force one another to devote far more coverage to the political and economic aspects of tobacco abuse. Being editors, they are in a collective and unique position to heap shame and scorn on their fellow editors in the news media whose hypocritical manipulation of health news should be widely publicized. The news media editors will probably continue their ignominious activities until forced to relent by continual medical-journal publicity.

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*The world cigarette pandemic. NY State J Med 1983; 83:1243-371 (symposium issue).

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*To the Editor:* In decrying the lack of involvement of physicians in efforts to curb cigarette smoking and its promotion, Warner neglected to cite the contributions of DOC, an eight-year-old national organization that has been supported by over 2000 physicians and medical students.

DOC's extensive activist endeavors have included the following: development of the first paid counteradvertising campaigns in the United States[1-6]; purchase of advertisements in *The New York Times* (Jan. 13, 1985) to call attention to the hypocrisy of the newspaper's solicitation of cigarette advertising while it accuses the medical profession of driving up the cost of health care[7]; sponsorship of "SuperHealth" conferences for junior-high-school students (run by teenagers themselves) that have explored ways to respond to the promotion of unhealthful products[3,5]; staging of a series of demonstrations or "house calls" by physicians and medical students at various events sponsored by tobacco companies[1,2,8]; convening of a conference with the American Medical Association Resident Physician Section on physician involvement in the community[9]; petitioning the Federal Trade Commission to remove the advertising of smokeless tobacco products from television; asking the attorney general to enforce the Public Health Cigarette Smoking Act by stopping tobacco-company sponsorship of televised sporting events[10]; launching a physicians' and parents' boycott of magazines that accept cigarette advertising[1,4,11]; establishment of physician-hosted SuperHealth radio and television programs in several states[2]; and urging physicians and universities to refuse research funding from the tobacco industry.[12]

Although physician and medical-student members of DOC from various chapters around the country have given more than 700 presentations on smoking and its promotion before medical conferences, meetings of civic groups, and educational gatherings from grade-school assemblies to grand rounds, national recognition of DOC by either the mass media or the medical profession has not been easy to come by.

In contrast to the widespread publicity given to physicians who speak out against nuclear war or apartheid (stances that are not inimical to advertisers' interests), little coverage has been given to physician-led efforts to ridicule and otherwise combat cigarette advertising.

The mass media have either been complacent or willfully ignorant concerning the adverse effects of advertising for cigarettes and other harmful products.[13] Within the medical profession, there continues to be academic disdain for activism and for such seemingly simplistic subjects as smoking.[14] Medical-school teaching, which encourages "nonjudgmental" approaches to patients, may well be reinforcing the notion that it is inappropriate for physicians to move beyond pamphlets, posters, or palaver in counteracting the killer habits.

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*To the Editor:* In his report on cigarette advertising and media coverage of smoking, Warner makes the charge that physicians have done little to justify a "leadership role in combating smoking-related illness and death."

Although this may well be true, Warner failed to mention DOC, a national physician-led organization that has been actively counteracting the promotion of cigarettes and other harmful products since its founding by three physicians in Miami in 1977.

In 1979, at the suggestion of members of DOC, the American Medical Association and the American Academy of Family Physicians (both of which were criticized by Warner) have publicly commended magazine publishers who do not accept cigarette advertising and have distributed a list of such publishers through their official publication. The National Cancer Institute described and commended DOC's various activities in a mailing to 30,000 primary care physicians. Descriptions of DOC's various activities have often been cited in medical and lay journals.[1-3] Indeed, in his report Warner described a number of DOC's ongoing projects without citation, even though he has mentioned DOC's activities in at least one other publication.[4]

DOC's efforts are directed primarily toward adolescents and children. Young "junior docs" are actively involved in the design and production of counteradvertising. The primary prevention emphasis differs distinctly from the bulk of prevention efforts, which have been directed largely toward encouraging older people to give up unhealthy habits. One of DOC's counter ads, featuring the line "I Smoke for Smell," spoofing a popular cigarette slogan of the late 1970s ("I Smoke for Taste"), was a basis of the government campaign featuring Brooke Shields. The effectiveness of ridicule was such that political pressure was brought to bear to cancel the campaign.

From its inception, DOC has tried to motivate physicians and medical students to become more involved in preventive efforts. Several medical schools, most notably the Eastern Virginia School of Medicine and the Medical College of Georgia, have implemented specific curricula based on DOC programs. Among DOC's activi-

ties at the Medical College of Georgia is the sponsorship of the Emphysema Slims Tennis Championship, held this year on March 30. In addition, residency programs in family medicine (e.g., in Cedar Rapids, Iowa, and Greenwood, South Carolina) have formally adopted DOC programs as part of their curricula. Participation in DOC activities has formed the basis for elective or required community medicine experience in numerous residency programs.

What is disturbing about Warner's report is that the author missed an excellent opportunity to inform others that DOC exists and to invite physicians to join its efforts. To have any major impact on cigarette smoking and its promotion, health professionals must make a united effort. Unlike traditional health organizations whose priorities are research or the socioeconomic interests of their membership, DOC has been solely devoted to the kinds of activities Warner espouses. (We are president and national coordinator, respectively, of DOC.)

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1. Blum A. Medicine vs Madison Avenue: fighting smoke with smoke. JAMA 1980; 243:739-40.
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*To the Editor:* Warner provides timely examples of the ways cigarette advertising influences the editorial policies of the media that carry the promotions. He mentions several proposed remedies, but most of these seem neither practical nor capable of contributing to a substantial reduction in cigarette consumption.

Neither free space for counteradvertising nor the conversion of cigarette ads to "tombstone" ads would counterbalance editorial policies influenced by millions of dollars in cigarette-advertising revenues. The advertising is so pervasive that effective boycotts are probably not feasible. As Warner suggests, banning print advertising for this product would be virtually impossible, and opponents will be quick to mention that cigarette use flourishes in countries that have no cigarette advertising.

Countermarketing is an effective means of achieving reductions in cigarette consumption.[1] In addition to the uncontrolled trial on television between 1967 and 1970, there have been three successful controlled experiments involving counteradvertising with and without local community programs (analogous to point-of-sale and direct marketing).[2-4] A large, stable source of revenue is needed for a prominent, first-quality campaign. If a countermarketing campaign were purchased at market rates, it would counterbalance the influence that the tobacco industry exerts through its ability to withdraw advertising from publications dependent on its advertising revenues.

In 1984, the tobacco industry spent an estimated six cents per pack of cigarettes on marketing.[5] This suggests a marketing budget of about $60 million for New Jersey. An increase in the state cigarette tax in this amount would create a countermarketing fund that would help people stop using tobacco and avoid starting. The tax could be set up so that a state's health commissioner would vary the amount of the tax in a given year to ensure that revenues never exceeded the amount spent on promotion by the tobacco industry. This would provide the industry with an incentive to reduce its marketing budgets. The use of the excise tax for a purpose related to tobacco also seems consistent with a commentary on this tax by the Tobacco Institute.[6]

Advertising bans face the dual problem of political improbability and likely ineffectiveness. Countermarketing is effective and is consistent with American traditions of fair play.

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5. Kirsch AS. The tobacco industry — positive developments. New York: Drexel Burnham Lambert, December 19, 1983.
6. Let's set the record straight: earmarking excises *unfair* — and *unsound* tax policy! Washington, D.C.: The Tobacco Institute.

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*To the Editor:* Warner demonstrates that the news media have been compromised by tobacco-advertising dollars and thus serve as a major carrier for the cigarette-disease epidemic. Stronger medicine will be needed, however, to restrain the tobacco, news, and advertising industries from business as usual than the appeals for civic responsibility, voluntarism, and boycotts recommended by Dr. Warner.

The filing of personal-injury or product-liability lawsuits against tobacco companies and their advertising agents may be this needed medicine. Within the applicable statute of limitation, this stringent, antiepidemic measure can be applied by any seriously ill victim of cigarettes or surviving family member in any civil court in the nation. Doctors should recommend such lawsuits, through which tobacco victims themselves have the power to stop the cigarette-disease pandemic.

The application of personal-injury or product-liability law is a proved and legitimate means to compensate victims, prevent disease, and save lives. This litigation strategy unites the three factors most effective in limiting cigarette consumption: increased cigarette price, negative publicity for tobacco, and social opposition to smoking. It is a strategy that cannot be compromised by tobacco's power to lobby government and censor media debate. It is an economical strategy fought by lawyers on a contingency-fee basis at little or no cost to government or plaintiff. These suits will reinforce all other prevention strategies and have a vast and unique potential to triple cigarette prices, collapse the market, and sharply cut consumption and new disease.

Such cases against the tobacco industry are now filed in California, New Jersey, Massachusetts, Ohio, Tennessee, and West Virginia. It is ethically and medically correct for doctors to refer to attorneys the thousands more victims whose combined efforts can defeat the tobacco-disease vector and its carriers. By forcing the tobacco industry to pay for the illness and injury it promotes, by making cigarette prices better reflect their true cost to society, and by dramatizing in court the tragic personal consequences of tobacco use, such lawsuits can sharply cut cigarette use and curtail its enormous harm.

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The above letters were referred to Dr. Warner, who offers the following reply:

*To the Editor:* I regret that a limitation placed on the length of my article did not permit me to discuss the work of DOC, for which I have the highest regard. I have discussed DOC in both previous[1] and forthcoming[2] publications and had mentioned the organization in a longer draft of the *Journal* article. I am delighted that the omission has resulted in this forum so that DOC's work can be highlighted in much greater detail. I think it is telling, however, that in identifying organized physician-led efforts to combat the cigarette problem, the letters from Drs. Burchard, David, Blum, and Richards and Houston focus only on DOC and the December 1983 issue of the *New York State Journal of Medicine*. As Dr. Davis correctly observes, both these enormously valuable efforts derive from the work of one physician, Dr. Blum. I readily acknowledge that many

individual physicians and some physician groups have striven to combat smoking. But I remain convinced that the most visible and influential medical organizations have not dedicated the effort to this problem that its importance warrants. Dr. Blum has articulated the same conviction often.

I find the strategic suggestions of Drs. Davis, Slade, and Charney to be thought-provoking and promising. Each has merit and the potential to make inroads against the tragic toll of smoking.

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1. Warner KE. An ounce of prevention, a pound of promotion: advertising and counteradvertising of cigarettes in the United States. Med J Aust 1983; 1:207-10.
2. *Idem.* Tobacco industry response to public health concern: a content analysis of cigarette ads. Health Educ Q (in press).

Letters to the Editor should be typed double-spaced (including references) with conventional margins. The length of the text is limited to 40 typewritten lines (excluding references). Abbreviations should not be used.

# OCCASIONAL NOTES

## Cost Containment by a Naval Armada

PRESIDENT Reagan assured us that a major objective in invading Grenada was to close the St. George's Medical School (although Russians, Democrats, and M. Mitterand attributed to him more sinister motives). Lingering doubts about his sincerity were resolved when, as the fighting wound down, he gave a luncheon party in the Rose Garden for the entire student body.

The closure of a medical school by a naval armada highlights the principal problem we have in containing the cost of health care: We are facing a glut of doctors, the consequence of which will be enormous costs without commensurate improvement in health. This statement is supported by the following observations:

Health care costs in 1982 were $322.4 billion. Since 70 per cent of this is accounted for by physician-controllable costs and there are 501,958 physicians in practice, the cost to society of each physician in practice is 70 per cent of $332.4 billion divided by 501,958, or $450,000 per annum[1] (income, overhead, hospital care, drugs, and amortization of capital costs). The calculation is based on historical data but is at best an approximation of future costs, because factors such as the increasing cost of technology will probably alter the estimated cost per physician.[2]

Secondly, health care costs are related not to the amount of illness but to the number of practicing physicians.[3]

Thirdly, in industrialized Western nations, there is no demonstrable relation between the health of the population and expenditures for health care.[2]

If the medical school in Grenada had remained closed for 10 years, the Reagan administration would have saved the U.S. taxpayers more than $7.9 billion (50 graduates per year, with average time in practice of 35 years at $450,000 per year). The Department of Defense calculates the cost of the Grenada invasion at $134.4 million (not including military pay). One can thereby calculate a favorable benefit–cost ratio of 59:1.

Because of a perceived shortage of physicians, public policy over the past three decades encouraged the opening of new medical schools and the enlargement of existing ones (the federal "capitation program," for example, paid medical schools a per capita allowance for each student in attendance for a specified increase in the number of students admitted). The number of medical graduates grew from 7000 in 1959 to 16,000 in 1983. The calculated future cost to society of the additional 9000 physicians per year for an (arbitrary) period of 25 years is $3.5 trillion (current dollars calculated as 9000 × 25 × 35 × $450,000). For nonpoliticians to whom the concept of a trillion dollars may be obscure, the following analogy will help: If a million dollars in one-thousand-dollar bills forms a stack six inches high, then $3.5 trillion in thousand-dollar bills stacks to a height of 350 miles.

What should be done? The Grenada solution seems a bit gross for handling the doctor plethora in, say, Boston. There are other approaches worth considering:

(1) *A decapitation program for medical schools.* We suggest that Congress provide $100 million (the cost of a small invasion) annually to be divided among the nation's medical schools on the basis of $1,600 for each 64,000 students in attendance, provided that each school reduce its enrollment of entering students by 5 per cent per year until the production of physicians decreases to the 1959 level. In the 15th year of the program, when the production of physicians has stabilized at the 1959 level, the $1.5-billion cost would be offset by $128.4 billion in to-date and future savings (favorable ratio, 86:1). The future savings would accumulate without further cost at the rate of $141.7 billion per annum (9000 nongraduates × 35 years × $450,000).

(2) *Federal "anti-dumping" regulations.* For the protection of the U.S. economy, federal law prohibits, under certain specified conditions, dumping on the domestic market of foreign steel and other manufactured goods. We recommend the extension of extant regulations for durable goods to include medical graduates.

(3) *The "Doc Bank" program.* As farmers are paid for not growing crops and dairymen for not milking cows, physicians could be paid for not practicing medicine. For every physician given a $100,000 per annum federal grant to refrain from practice, the annual net savings to society would be $350,000. This would expand the pool of physicians available for such nonpracticing jobs as editing of medical journals, appearing as consultants on television talk shows, and gumshoeing around neonatal nurseries looking for Baby Does.

The acuteness of the problem is illustrated by the situation in California. The Auditor General has reported that the state has an excess of 10,000 physicians and that even if the University of California closed its