



TRDRP Newsletter

News from the Tobacco-Related
Disease Research Program

Volume 2, Number 3
November, 1999

Tobacco Use In Indian Country

by Phillip Gardiner

American Indian and Alaska Natives (AIAN) have used tobacco products for thousands of years. They introduced their special ceremonial leaf to their European conquerors, who subsequently introduced it to the rest of the world. Before 1492, only native peoples of the Americas smoked tobacco, but by the 1650s, tobacco had spread throughout Europe, Asia and the coasts of Africa (1). Tobacco was once used mainly in spiritual rites, now AIAN use this substance principally as an addictive habit shared by the rest of the world. Today, AIAN have the highest smoking prevalence in the United States (2). This elevated use is due to a very complex, paradoxical and culturally driven relationship that this population has with tobacco.

Smoking Rates of American Indian and Alaska Natives

The Surgeon General reported that for the period of 1975 to 1995, smoking prevalence declined for African Americans, Asian/Pacific Islanders and Hispanics, but not for AIAN (2). The current tobacco use rates reported by AIAN vary considerably, since there are few nationally representative surveys of this population. However, one of the more recent surveys report that while adult AIAN smoking rates are about 38.5% (3), AIAN youth rates are approaching 50% (2). There are major variations in

See "Indian Country" page 4

Also in this Issue

Unselling Tobacco 6

TRDRP Highlights 9



Image from the Australian National Tobacco Campaign, see article on page 6.

Health Effects of Tobacco Use What else do we need to know?

by Jeffrey Cheek

Everyone knows that smoking kills, as epidemiological studies have long identified the adverse health effects of tobacco use. Nevertheless, a significant proportion of adults still smoke, and youth smoking rates are increasing. These facts ensure that tobacco use will continue to have a major impact on personal tragedy and health care costs for decades to come. Although smoking is the leading preventable cause of death, some question the need to continue researching the health effects of smoking. What is the role of experimentally-based biomedical research in the current tobacco control effort?

Tobacco use presents a complex challenge for attributing specific health effects to a certain means of exposure and thus establishing a cause-effect relationship. Unfortunately, in the health sciences, researchers operate with risk factors and probabilities, since getting definitive evidence of causality is easier said than done. As revealed in litigation documents, the to-

bacco industry has masterfully hindered tobacco control efforts by categorically challenging studies of tobacco's health effects (and by concealing self-incriminating data from its own research). Recent advances in molecular epidemiology have successfully been used to establish links between specific components of tobacco smoke and associated diseases. However, these studies are less informative in characterizing the effects of relatively low level exposures or in understanding the combined (and possibly additive) effects among the individual components in tobacco smoke (1). In addition, not all smokers are equally likely to suffer from tobacco-related morbidity or mortality.

Such variability in individual susceptibility to tobacco-related disease and the difficulty in estimating disease risks and probabilities compromises the public perception of risk. The intent of this article is to illustrate how, by the identification of specific dose-response relationships and the identification of individual factors that

See "Health Effects" page 2

Health Effects

Continued from page 1

govern susceptibility, biologically-based experimental and exposure assessment studies are essential components of health effects research. By no means is this article an exhaustive listing of research needed to define the risks associated with tobacco use. Rather, the aim is to highlight some of the critical areas in which additional efforts will lessen tobacco's impact on personal health and our health care resources and provide additional ammunition for tobacco control efforts.

How does tobacco kill thee?

Let me count the ways.

Tobacco use is responsible for approximately one fifth of all deaths in the U.S.; 28% of these involve lung cancer, 37% result from vascular disease, and 26% are due to other pulmonary ailments (2). Lung cancer continues to be the leading cause of cancer death for Americans (both men and women). Collective data provide strong evidence for approximately 20 of the 4000-plus compounds in tobacco smoke in causing lung cancer; the polycyclic aromatic hydrocarbons (PAHs) and nitrosamines (particularly NNK), are especially potent (3). Recent research has begun to uncover how these tobacco-specific toxins may interact directly with DNA and thus initiate cancer (4). Unfortunately, important gaps remain in our understanding of the overall mechanism of cancer initiation, progression, and metastasis; how tobacco use leads to other target organ malignancies (e.g., pancreatic cancer); and how these factors correspond to the risk associated with secondhand smoke exposure. In any event, the magnitude of morbidity and mortality for all tobacco-related cancers justifies our pursuit of better methods for diagnosis and treatment. From a preemptive point, apart from the obvious benefits of smoking cessation, a promising field of study for addicted smokers and exsmokers is chemoprevention (3).

Equally critical (but less obvious) is the need to identify the biological mechanisms underlying the development of tobacco-related illnesses, which serves as the foundation for subsequent studies applied

to the diagnosis and treatment of tobacco-related disease. While lung cancer is one of the first recorded (and often most feared) consequences of smoking, far more smokers are afflicted with cardiovascular and pulmonary ailments. Tobacco toxins other than nicotine (e.g., carbon monoxide, free radicals or oxidant species) are thought to be the most important causes of acute cardiovascular events (5), but their respective roles in the initiation of heart and lung disease are not well understood. Cardiovascular disease remains the leading cause of death for smokers, and secondhand smoke appears to be disproportionately effective in causing coronary heart disease (6). Chronic obstructive pulmonary disease (COPD) mortality is the only one among the ten leading causes of death in which the age-adjusted mortality rate has been increasing over the last 30 years; this

While basic biological studies are critical to our success in reducing tobacco's impact on public health, we also need translational and applied research in health effects focused on the affected individuals and groups at risk.

rise is directly attributable to smoking (7). Although risk factors for the susceptibility of smokers to cardiopulmonary diseases have been established, there are still large gaps in our knowledge of the biological basis for these risk factors and of how to identify individuals or populations at risk.

In contrast to our awareness of the risk factors for smoking, little is known about the adverse effects specific to nicotine. Due to the multiple toxins delivered in mainstream smoke, smoking cessation strategies have included nicotine replacement therapy (NRT) as a primary treatment. Nicotine is also being evaluated as a potential therapeutic agent for several seemingly unrelated diseases (see "Can Nicotine Be a Friend?"; TRDRP Newsletter, 2 (2):1). Potential nicotine-related health effects are an important consideration towards assessing benefits versus risks in drug development and in the promotion of NRT;

also, the National Cancer Institute has advocated for increased research on the biological determinants of nicotine's addictive properties. While there is no definitive evidence that chronic, low level exposures to nicotine directly contribute to human disease, there remain several areas of concern. While there is evidence of nicotine-dependent effects in the progression of atherosclerosis, thrombosis and vascular injury via activation of the sympathetic nervous system (5), its direct effects on cardiac and blood vessel function are relatively unknown. Also, the effects of nicotine on potential target organs or systems warrant additional exploration.

Secondhand smoke: how bad is it – and for whom?

Identifying the health risks of complex chemical mixtures, such as secondhand or environmental tobacco smoke (ETS), is equally challenging to toxicologists using experimental approaches and to epidemiologists using observational approaches. Accurate exposure estimation is essential to investigating the health consequences of secondhand smoke; misclassification errors in exposure estimation typically blunt the sensitivity of epidemiological studies and constrain the interpretation of findings. On the other hand, epidemiological data have the advantage of directly addressing risks of exposures in human populations and, for this reason, these findings have received prominence in the development of regulations that limit public exposures (1). Nevertheless, interpretation of the results of epidemiological research on the health effects of secondhand smoke remains controversial, as some experts maintain that these studies declare causal associations based on marginal odds ratios (8). Future research on the health effects of secondhand smoke will benefit from multidisciplinary approaches to establish links between exposure and disease, to accurately assess exposure and to define cause-effect relationships.

The California Environmental Protection Agency (9) has summarized the health effects attributed to ETS exposure in a comprehensive report. Diseases listed as "causally associated" include respiratory effects (e.g., asthma induction in children), car-

The California Environmental Protection Agency (9) has summarized the health effects attributed to ETS exposure in a comprehensive report. Diseases listed as "causally associated" include respiratory effects (e.g., asthma induction in children), car-

See "Health Effects" page 3

Health Effects

Continued from page 2

diovascular illnesses (e.g., coronary heart disease or CHD) and developmental effects (e.g., Sudden Infant Death Syndrome or SIDS; see below). More recent epidemiological evidence in support of the recent California restrictions on smoking in bars was provided by a study showing that bartenders working in newly smoke-free taverns exhibited rapid improvement in their respiratory health (10). However, identification of the biological factors governing the risk of exposure to secondhand smoke to likelihood of associated disease remains critical. As noted above, it is not known why, in comparison to active smoking, secondhand smoke has a relatively greater effect on the risk of CHD in nonsmokers (9). In contrast to earlier studies, a recent epidemiological report suggests that secondhand smoke may increase the risk of breast cancer in nonsmokers, but the biological mechanism likely varies by sexual maturity and genetic susceptibility (11). Ideally, future efforts will combine epidemiological observations with exposure assessment, both in terms of field measurements and quantification of individual exposures. Biomedical studies on the development and verification of appropriate exposure biomarkers (e.g., serum or salivary cotinine, a metabolite of nicotine), which establish the relevance, if any, of biomarker responses to known health effects, would aid assessments of individual risk (12). Such multidisciplinary approaches will facilitate exposure quantification and the development of dose-response data specific to ETS, which will increase our understanding of causal relationships and how ETS exposure leads to acute and chronic illnesses.

Parental smoking and its effects on child health

Despite the decreasing prevalence of ETS exposure in California resulting from restrictions on public smoking, exposure of infants and children in the home is a continuing public health concern. Over the last 10-15 years, numerous epidemiological and animal-based studies have confirmed the detrimental effects of maternal smoking on fetal development, mostly focusing on reduced birth weight (9). How-

ever, Slotkin and coworkers (13) have suggested that prenatal exposure to nicotine may cause lasting neurochemical changes that increase newborns' risk for cardiorespiratory failure. Such data provide incentive for women to avoid smoking while pregnant; unfortunately, many continue to smoke after childbirth (14). Fathers who smoke also contribute to the presence of ETS in homes of newborn children. Sequentially, the strongest epidemiological association for SIDS is postnatal exposure to maternal smoking; however, neither the biological factors contributing to this devastating problem, nor the relative contributions of timing and duration of exposure, are known. ETS effects on children occur beyond the postnatal period, as childhood exposure to secondhand smoke is causally associated with initiation of asthma and COPD (15); the biological basis for ETS effects on lung development is not well understood. The relationship of paternal smoking to the exacerbation of childhood allergies remains highly controversial (16). Efforts to reduce childhood exposure to tobacco smoke may benefit from combined intervention-based and biological study designs, as the measurement of parental smoking in the home is potentially contentious (e.g., right to privacy issues).

Bridging the gaps – some challenges for the future

Past studies on the health effects of smoking and exposure to secondhand smoke have powerfully influenced public opinion and, accordingly, regulatory and judicial action. Tobacco use is an avoidable problem; however, the addictive nature of smoking and the behavioral problems it poses ensures its continued impact on public health. Although not detailed in this article, there are many other adverse health effects associated with tobacco use, as well as diseases whose relationship to tobacco is still undefined. One recent example is provided by the study cited above, linking tobacco and breast cancer. Depending on a woman's age, exposure to tobacco may paradoxically exert either a genotoxic (and thus cancer-initiating) effect versus a protective, anti-estrogenic effect; this contradictory role may have masked detection of any association with tobacco use in previous epidemiological studies (11).

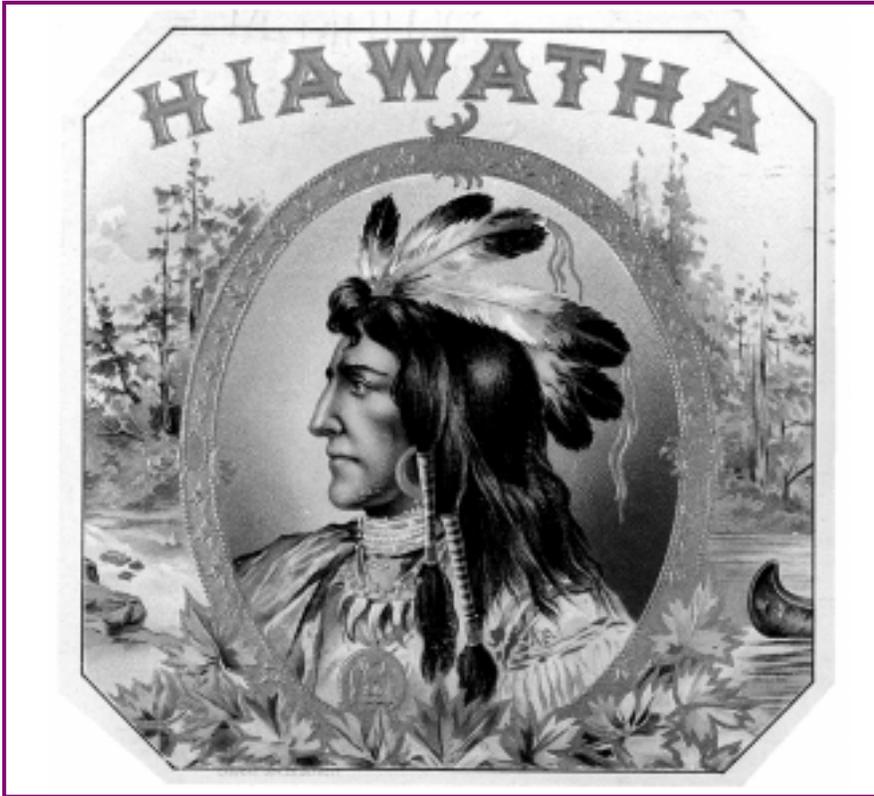
Such findings epitomize the need for continuing our biomedical investigations into the heretofore unknown or less understood consequences of tobacco use. While basic biological studies are critical to our success in reducing tobacco's impact on public health, we also need translational and applied research in health effects focused on the affected individuals and groups at risk. Increased understanding of specific health effects related to exposure will benefit both regulatory and behavioral aspects of tobacco control. Finally, as demonstrated by the introduction of "low tar" cigarettes in its superficial responses to previous public concerns, the tobacco industry will adapt to a changing regulatory or market environment. The challenge to the public health community is to counter Big Tobacco's tactics by vigilantly maintaining our surveillance of tobacco's current and future adverse health effects.

References

1. Samet JM. *Toxicology* 105:307-314, 1995.
2. Peto R et al. *Lancet* 339:1268-1278, 1992.
3. Hecht SS. *J. Natl. Cancer Inst.* 91:11941210,1999.
4. Denissenko MF et al. *Science* 274:430-432, 1996.
5. Benowitz, NL. *Preventive Medicine* 26:412-417, 1997.
6. A report of the Surgeon General. US DHHS (CDC) 90-8416, 1990.
7. Wise RA. *Preventive Medicine* 26:418-421, 1997.
8. Manuel J. *Environ. Health Pers.* 107:A196-201, 1999.
9. California Environmental Protection Agency. Health Effects of Exposure to Environmental Tobacco Smoke – Final Report, September 1997.
10. Eisner MD et al.. *JAMA* 280:1909-1914, 1998.
11. Lash TL, Aschengrau A. *Am. J. Epidemiol.* 149:5-12, 1999.
12. Koren HS, Lippmann M. *Toxicology* 105:305-306, 1995.
13. Slotkin TA et al. *Brain Res. Bull.* 38:69-75, 1995.
14. Gillies PA et al. In: *Smoking and Health 1987* (Aoki M, Hisamichi S, Tominaga S; eds.), Elsevier, Amsterdam; p. 532-534, 1988.
15. O'Byrne PM, Postma DS. *Am. J. Resp. Crit. Care Med.* 159:S41-S66, 1999.
16. Strachan DP, Cook DG. *Thorax* 53:117-123, 1998.

Indian Country

Continued from page 2



Tobacco Art from the 19th century.

AIAN smoking rates, ranging from 44.2% in the Northern Plains States to 25.4% in the Southwest (4). Moreover, documentation of tobacco use at Indian Health Service-affiliated clinics varies considerably, from no documentation in the Albuquerque, Navajo and Phoenix areas to 51% in the Oklahoma area (5). Women of reproductive age continue to report extremely high smoking rates; 34% reported smoking cigarettes in the 12 months before delivery (6). Most strikingly, AIAN use of smokeless tobacco is staggering. Bruerd reviewed nine studies of schoolchildren's use of smokeless tobacco in seven states and found that the prevalence of use ranged from 18% in K-6th grades to 55.9% in ninth and tenth grades (7)!

The 1990 census shows that 242,000 AIAN live in California, the second largest concentration of Indians in the country (8). Many AIAN in California live on reservations, but the majority are concentrated in urban centers: San Francisco, Oakland, Los Angeles, Sacramento, and San Jose (8). But, unlike the lower smoking rates being experienced by the majority of Californians, this is not true for AIAN

living in this state. Results of a recent survey even surpasses some nationally estimated averages, with AIAN adults reporting 47% of males and 37% of females were current smokers (8). Moreover, unemployed and welfare recipients have smoking rates approaching 56%.

Identified Risk Factors

Some scholars suggest that the high smoking rates among AIAN are due to the positive association of tobacco with historical and/or current spiritual rites (9). Other researchers have targeted peer pressure and the known pharmacologic effects of tobacco as important predictors for AIAN smoking (10). In a study of Cree schoolchildren, being older, female, having a mother who smoked and having a best friend who smoked were all associated with youth smoking (11). Moncher and colleagues examined the tobacco use among 1147 5th grade AIAN and found that family use, cultural identity and religiousness were associated with current and previous use of cigarettes or smokeless tobacco (12).

Moncher and others suggest that there may be a generational and an acculturation effect at play among AIAN tobacco users. Sprangler, et al., found that among Lumbee women in Robeson County (North Carolina), cigarette smoking was associated with younger age, higher education, excellent or good self-reported health, having had a recent medical examination, being separated or divorced, low church participation and alcohol consumption. On the other hand, these authors found that the use of smokeless tobacco was associated with older age, lower education, fair or poor self-reported health, and having many friends (13). Interestingly, these same authors have found that the use of smokeless tobacco among Eastern Band Cherokee women was highly correlated with consulting an Indian healer. It seems that acculturation plays a significant role in the types of tobacco use among AIAN (14).

Other investigators have also found acculturation processes at work. Hodge and colleagues have demonstrated that there are differences between the smoking patterns of urban versus rural Indians. Urban Indians were more mobile and reported higher smoking rates as compared to rural Indians (15). These authors suggest that long-term isolation from reservation and traditional homelands may have contributed to a breakdown in social support systems among urban Indians. It has also been pointed out that heightened rates of tobacco use among AIAN might be explained by a relatively weak tobacco control infrastructure within American Indian communities (15,16). The lack of a viable tobacco control infrastructure is a reflection of the continued disenfranchisement faced by AIAN.

The historical and cultural use of tobacco by AIAN must be considered in examining current usage patterns.

Tobacco and The Great Spirit: Yesterday and Today

Some authors suggest that the use of tobacco, both ceremonially and for pleasure, was spread throughout the Americas by the Mayan and Aztec Civilizations, thousands of years before European colonialization (1). By the time of the conquest, tobacco was being used in major ceremonies by most of the AIAN. Na-

See "Indian Country" page 5

Indian Country

Continued from page 4

tive medicine men and women were acutely aware of the powerful and toxic nature of the tobacco plant. The tobacco leaf, when burned, would allow Indians to communicate with the great spirit. It was felt that the strong intoxicating effects of tobacco allowed shamens to enter a trance world, giving them great powers. But the medicine men were not the only ones who used tobacco products; all members of the tribe were involved. In many tribes it was (and may still be) normal to have teething babies chew tobacco leaf; tobacco was often added to water and other liquids and used as a sedative; tobacco was stuffed in pipes or rolled up in corn husks and smoked before tribes went into battle; the "peace-pipe" was passed when war was over; and tobacco was offered as gifts on many occasions. Many of these practices, some of them thousands of years old remain today in Indian Country and in part are responsible for the disproportionate tobacco use by this population.

AIAN youth, through the maintenance of tribal rituals and ceremonial practices, among other factors, are exposed to tobacco use at an early age. Centuries ago, this exposure did not necessarily lead to addiction, but today with the breakdown of many native customs and practices, the advent of cigarettes, and the continued disenfranchisement of native peoples has turned the use of tobacco deadly. Even though cancer incidence remains low among AIAN compared to other sectors of the US population, their lung cancer mortality is on the rise (2). As has been highlighted above, there is much variation in Indian Country. American Indians in the Southwest have the lowest lung cancer death rates, whereas Alaskan Natives and Northern Plains Indians had the highest rates (2). These mortality statistics are reflective of the differential smoking patterns reported above (2). The maintenance of native customs, practices and rituals, especially among the southwest tribes of the Navajo and Hopi, may be protective against addictive practices with tobacco.

Surely the exposures AIAN experienced centuries ago differ from today. There were no cigarettes, no reservations, and no to-

bacco company promotions. Moreover, tobacco was not treated with chemicals, like ammonia, to boost its addictive qualities. Tragically, the ceremonial use of tobacco, once more or less benign, now can serve to jump-start AIAN kids' journey down the road of nicotine addiction and disease. It should be noted that there are potentially unintended legal consequences associated with ceremonial use

This complex intergration of tobacco and culture presents an important and daunting challenge to both researchers and tobacco control advocates.

of tobacco. It is against the law for an adult to give tobacco products to a minor. Yet, adults sharing tobacco products with children are an integral and essential part of AIAN cultural heritage. Tobacco control advocates must keep these cultural facts in mind when introducing tobacco control strategies among this population (8,17).

Here is a population where tobacco use is an integral part of its religious and social customs. Since religious and ceremonial use of tobacco involves all generations within the Native community, its continued use can not just be stamped out, nor should it. This complex integration of tobacco and culture presents an important and daunting challenge to both researchers and tobacco control advocates.

Tobacco on the Reservation

Tobacco cultivation and sale has become an important income-generating resource on many AIAN reservations. Since reservations are exempt from paying excise and sales taxes on tobacco products, tobacco is cheap (2). Cheap cigarettes and alcohol, coupled with unemployment rates of over 50%, have made the tobacco shops literally magnets for many AIAN who are reservation bound. These shops supply tribal members with loose tobacco, cigarettes, cigars, pipes and rolling paper among other tobacco related products. Unfortunately, these shops serve mainly to tranquilize and temporarily alleviate the AIAN pain, and promote habitual tobacco consumption as opposed to ceremonial to-

bacco utilization. In effect, the tobacco shops are similar to corner liquor stores in many impoverished urban centers.

Tobacco shops are not only frequented by AIAN living on the reservation, but by other tobacco consumers who live close by. Even though these shops are legally restricted to selling tax-free cigarettes to AIAN, there is little enforcement or oversight. Since there are no taxes or very low taxes on Indian tobacco, there is an economic incentive for people to make the trip to Indian Country to buy tobacco products. The increased selling of tobacco products at tobacco shops pushes the production of more tobacco on the AIAN reservations. Not only is tobacco produced for ceremonial and religious use, now it is increasingly being cultivated for sale.

Since Indian lands are not subject to state and local laws, many AIAN are operating gambling casinos that allow cigarette smoking indoors. Casinos have spread rapidly through out Indian Country and with them the exposure of native workers to secondhand tobacco smoke. With many finding employment in these relatively new ventures, more and more AIAN are being exposed to the negative health effects of secondhand smoke.

It seems that the sociopolitical dynamics of the reservation system itself are driving increased tobacco consumption by AIAN. The continued ceremonial use of tobacco, access to cheap tobacco products, growing tobacco cultivation on reservations and the advent of casinos are all important factors in AIAN elevated smoking and tobacco use rates relative to all other sectors of the population

AIAN Tobacco Research: Where Do We Go From Here?

There has been some important research conducted among native peoples, many of those sources were cited in this article. Still, there needs to be increased examination of tobacco use among this population. There are 543 distinct AIAN tribes in the United States; just the heterogeneity of this population demands that researchers conduct detailed investigations into the specific determinants of tobacco use by different tribes. It is not sufficient to assume that because many AIAN religious and ceremonial practices utilize tobacco

See "Indian Country" page 6

Indian Country

Continued from page 5

that all tribes have the same relationship to this substance.

Moreover, many AIAN are attempting to re-integrate traditional tobacco use into their lives. It is important to know if this re-integration is inadvertently laying the foundation for greater tobacco abuse, especially among native youth. This attempted re-integration is taking place at the same time that tobacco production has increased on native reservations. Could these two divergent phenomena coalesce to maintain or even increase tobacco use among this population?

The literature cited above, points to acculturation as an important factor in understanding Indian tobacco use. Larger

studies would be helpful to develop a greater understanding of this phenomenon and allow the creation of culturally relevant smoking cessation programs for this population. California is home to one of the largest AIAN populations in the United States; TRDRP encourages all researchers to utilize this valuable resource in planning and implementing their investigations.

References

1. Corti, C History of Smoking, Guernsey Press, 1996.
2. A Report of the Surgeon General, USDHHS, pgs., 12, 44-55, 143, 209-211, 213, 227,233, 236, 1998.
3. Gilliland FD, et al. *Tobacco Control*, 7(2): 156-60.
4. Behavioral Risk Factor Surveillance System, 1988-1992.
5. Reece DH. J., *Community Health*, 21(5): 389-96, 1996
6. Sugarman JR, et al. *Public Health Reports*, 109(2): 243-50.
7. Bruerd B. *Public Health Reports*, 105(2): 196-201.
8. Hodge FS, et al. NCI Monograph "Native Outreach," pgs. 67-74, 1999.
9. Weibel-Orlando J. The American Experience with Alcohol: Contrasting Cultural Perspectives, Plenum Press, pgs., 201-226, 1985.
10. Schinkes P, et al. *J Alcohol and Drug Education*, 35(2): 1-12, 1990.
11. Pickering J, et al. *Arctic Medical Research*, 48(1): 6-11, 1989.
12. Moncher MS. *J. Counseling and Clinical Psychology*, 58(4): 408-15, 1990
13. Spangler JG, et al. *J Community Health*, 22(2): 115-25, 1997
14. Spangler JG, et al. *AJPH*, 87(1): 108-11, 1997
15. Hodge FS, et al. *Cancer* 78(7 Suppl): 1623-8, 1996
16. Robinson RG, et al. Tobacco and Health, Plenum Press, pgs. 359-65, 1995
17. Lichtenstein and Lopez. NCI Monograph "Native Outreach," pgs. 57-65, 1999.

Unselling Tobacco: An Overview of Counteradvertising Campaigns

by Jerome Beck

Currently, five states (California, Massachusetts, Arizona, Florida and Mississippi) are waging multimillion-dollar anti-smoking media campaigns. On an even larger scale, a consortium of major advertising firms was recently selected to carry out an unprecedented nationwide counteradvertising campaign stipulated by the Master Settlement Agreement. An estimated \$150-225 million/year has been set aside to fuel this youth smoking prevention ad campaign to be waged on television, radio, print media, and internet channels throughout the nation. Given the growing interest and unprecedented level of funding available for anti-tobacco ad campaigns, it is important to step back and ask what we really know about the efficacy of differing counteradvertising strategies currently in evidence. This article takes a brief look at some of the lessons learned and the daunting challenges facing those conducting much needed evaluative studies of such efforts.

Past and Present Tobacco Counteradvertising Campaigns

Mass media anti-tobacco messages largely began with smoking prevention efforts carried out by the federal government and voluntary health organizations

in the 1960s. As a result of the FTC's Fairness Doctrine and subsequent court rulings legitimating its validity in this instance, broadcasters were required to carry anti-smoking ads on television and radio from 1967 through 1970. Evidence suggests that these served as an effective counterpoint to the extensive cigarette advertising in those media. Alarmed by the sharpening decline in cigarette sales observed during this time, the tobacco industry offered to voluntarily discontinue all advertising on radio and television in an attempt to derail the public health counteradvertising campaign. Congress acted on that offer in subsequently passing legislation banning such advertising from the airwaves. As a consequence, both pro and anti-smoking ads soon vanished from these media and, much to the tobacco industry's satisfaction, the decline in per capita cigarette consumption soon leveled off and even began to rise for the first time since the publication of the 1964 Surgeon General's Report. This episode nevertheless managed to provide persuasive evidence that a carefully orchestrated anti-smoking media campaign could effectively counter the effects of cigarette advertising. (1,2,3,4) Unfortunately, limited funding and governmental disinterest en-

sured minimal presence of anti-smoking ads during the 1970s and 1980s.

Only with the passage of Proposition 99 in California in 1988 did a significant tobacco counteradvertising effort once again emerge, this time at the state level. Throughout the 1990s, the California ad campaign has played a vital role as a fundamental part of a multifaceted tobacco control program which includes school and community-based programs as well as funding for research. (5) Following the successful precedent established in California, a handful of other states subsequently designed and implemented comprehensive anti-smoking programs that included counteradvertising efforts. Massachusetts was the first of these to do so in 1993, and continues to spend a larger amount per capita on its media campaign than any other state, including California. (6)

In addition to producing its own anti-smoking ads, Massachusetts has judiciously borrowed advertisements from other states, a practice strongly encouraged by the Centers for Disease Control (CDC). Recognizing the considerable skill and expense required to produce high quality, effective anti-tobacco advertising, CDC has licensed

Campaigns

Continued from page 6

approximately 200 television and 100 radio spots, together with 75 print and 25 outdoor ads developed by the California, Massachusetts, Arizona and Florida state campaigns, as well as from other sources. These have been made available (along with technical assistance if desired) to interested parties through its Media Campaign Resource Center for Tobacco Control (for more information, see www.cdc.gov/tobacco).

A particularly notable source of anti-smoking ads available through the Media Campaign Resource Center deserves special mention: the Australia National Tobacco Campaign. Launched in June 1997, this effort is unique for its hard-hitting focus on adult cessation in contrast to the usual target of youth prevention. It has since earned the reputation as “the mother of all scare campaigns” for its unabashed reliance on graphic fear appeals and gory images to capture the attention of smokers in conveying the underlying message that “Every cigarette is doing you damage”.(7) The background, theoretical framework, and carefully planned evaluative scheme for the Australian National Tobacco Campaign can be found on its web site (www.quitnow.info.au), which also features stills of various ads along with other video and audio material.

At this juncture, the only current national media effort is the well-endowed Philip Morris youth prevention campaign. As Sabin Russell, staff writer for the *San Francisco Chronicle* points out, “At best, they say, the \$100 million annual commitment is earnest money, a pledge to be a kinder, gentler cigarette company. At worst, it’s a clever way to get the name Philip Morris back on the tube — a little brand-name recognition for when kids grow old enough (nudge, nudge) to smoke.”(8) An initial report by Teenage Research Unlimited points out that from a research perspective, the “anti-smoking” ads produced by America’s largest tobacco company are deserving of the utmost scrutiny for the underlying message(s) they convey. Their findings with focus groups show that teens are able to pick out the Philip Morris ads as industry-

sponsored ads, and rated them as weak. (9) As also amply evidenced in internal documents now coming to light, these are the masters in the business of understanding exactly what works to sell their products (as well as what does not). Claims to altruism notwithstanding, it is perhaps not surprising that each of the many ads produced for this campaign feature youth proclaiming smoking to be “uncool” without providing any particular rationale (such as short or long-term health risks) for rejecting this product.

What We Know about Counteradvertising

Studies of mass media public health campaigns have generally found well-conceived efforts to achieve at least some evidence of success, albeit modest in many instances. The most promising findings have almost invariably involved media campaigns which have complemented other efforts within broader, multifaceted tobacco control programs. {10,11,12}

It has been difficult to estimate the actual contribution of California’s media campaign, relative to other tobacco control activities, in contributing to the significant decline in tobacco use among its residents relative to the rest of the nation during the past decade. In addition to the problems encountered in attempting to tease out the relative efficacy of media campaigns from broader anti-tobacco efforts, such campaigns have generally employed a wide variety of anti-smoking message types. Consequently, evaluative

studies of state efforts have been largely unable to ascertain whether certain message types or categories work better than others. (11,12)

Among the only published efforts comparing the relative efficacy of different antismoking campaigns was a recent article in the *Journal of the American Medical Association (JAMA)* written by Lisa Goldman and Stanton Glantz. (6) Based on their review of a substantial collection of focus group transcripts obtained from California, Massachusetts and Michigan, the authors concluded that the most compelling advertisements were ones which addressed concerns surrounding second-hand smoke or tobacco industry manipulation. A number of other researchers subsequently disputed the assuredness of their findings, however, pointing out the problems inherent in attempting to generalize from information gathered from small, non-random samples of individuals. (11,14,15)

Glantz and Goldman’s conclusions regarding the effectiveness of targeting tobacco industry manipulation did, however, receive support from recent survey findings from Florida. Unlike other state media campaigns, Florida decided from its conception in 1998 to focus on a particular theme: making adolescents aware of the pernicious nature of tobacco industry manipulation. Despite the recency of the Florida campaign, a significant decline in youth smoking over the past year has provided some suggestive evidence that the singular focus of its media campaign could be working. (16) Neverthe-

See “Campaigns” page 8

Effects of Different Antismoking Messages

Ad Category	Ad Type	Affect & Cognition	Attitudes	Intent
Negative consequences of cigarette smoking	Cosmetics	No Effect*	No Effect	No Effect
Negative consequences of cigarette smoking	Death & Disease	Increase perceived severity of health risks	No Effect	No Effect
Negative consequences of cigarette smoking	Endangers Family	Elicited feelings of empathy and increased perceived severity of health risks	Increased negative attitudes toward smoking	Decreased intent to smoke
Normative information about cigarette smoking	Smoker Rejections	Reduced beliefs that smoking leads to peer acceptance	Increased negative attitudes toward smoking	Decreased intent to smoke
Normative information about cigarette smoking	Nonsmoker Acceptance	Reduced beliefs that smoking leads to peer acceptance	No Effect	Decreased intent to smoke
Negative information on cigarette marketers	Marketing Deception	Increase marketing knowledge	No Effect	No Effect
Negative information on cigarette marketers	Selling Disease & Death	Increase perceived severity of health risks and <u>marketing</u> knowledge	No Effect	No Effect

*Note: The messages in bold font are considered to be effective because youths who saw such messages (vs. control messages) reported a significantly lower intent to smoke (p’s£0.05). *No Effect means no statistically significant effect for antismoking (vs. control) messages on the designated outcome measure (p’s£0.05).*

(Pechmann and Goldberg, 1998)

Campaigns

Continued from page 7

less, as with other states, it will be difficult to tease out exactly what impact the advertising campaign may have had in contributing to reductions in youth smoking, since only about a quarter of tobacco control funds are actually spent on the ad campaign.

In a recent study funded by TRDRP, Cornelia Pechmann and Marvin Goldberg reviewed approximately 200 youth-oriented anti-smoking ads currently available in attempting to assess their relative efficacy in changing beliefs, attitudes and intentions to smoke among a large sample of ethnically diverse 7th and 10th grade students. As illustrated in the **TABLE** on page 7, the investigators identified seven distinguishable message types from this large pool of contemporary anti-smoking ads. (17) They then collapsed these seven variants into three general categories of thematic emphasis:

1) *Negative Consequences* (“Cosmetics”, “Disease & Death”, and “Endangers Family”) messages which rely heavily on the principles of Protection Motivation Theory (Rogers) and the Health Belief Model (Janz and Becker);

2) *Normative Information* (“Smoker Rejection” and “Nonsmoker Acceptance”) messages which are based on the Theory of Reasoned Action (Fishbein and Ajzen);

3) *Cigarette Marketers* (“Marketing Deception” and “Selling Disease and Death”) messages which utilize Media Literacy principles (Hobbs) and the Persuasion Knowledge Model (Friestad and Wright).

Pechmann and Goldberg found only certain messages to be efficacious in terms of reducing adolescents’ intent to smoke. These included one of the *Negative Consequences* messages (“Endangers Family”), which elicited strong feelings of empathy, made the risks of smoking seem more severe, created more negative attitudes toward smoking, and lowered intent to smoke. Both of the *Normative Information* messages (“Smoker Rejection” and “Nonsmoker Acceptance”) also worked well but for much different reasons – namely to combat perceptions that smoking fosters peer acceptance. Although concurring with the findings of Goldman and Glantz regarding the apparent efficacy

of ads targeting ETS exposure, Pechmann and Goldberg were unable to detect significant changes in youth intentions to smoke after viewing the “Marketing Deception” and “Selling Disease and Death” ads. (17)

What Remains to be Learned

The conclusions and recommendations regarding counteradvertising campaigns made by Brian Flay back in 1987 still ring true today: “This review makes it clear that mass media can be used successfully in the reduction of one of the most life-threatening behaviors of today. However, little is known about the use of mass media for smoking control in particular and health promotion in general. We cannot afford to sit back and simply do more of the same. The levels of success obtained are still somewhat modest, and could be improved dramatically. Even in this review, the very best programs were much more effective than the worst or even the average, yet the published reports provided very few ideas on why some were more successful and others less so. A great deal of theoretical development and scientifically valid research will be necessary to determine the crucial elements of successful mass media programs” (10).

While some work has been done in the intervening years, further research is obviously needed in determining exactly what types of anti-smoking ads work best and for whom. As the national youth prevention campaign financed by the tobacco settlement prepares to get underway, its creators will hopefully reject the simplistic notion that media efforts operate in some form of vacuum. Instead, it is incumbent upon them to recognize that successful campaigns depend on a clear understanding of their role in supporting broader, carefully orchestrated tobacco control programs.

References

1. Gerbner G. : *Youth and Drugs: Society's Mixed Messages* (Resnik, H, ed.) U.S. OSAP Prevention Monograph-6: DHHS:Rockville, MD:53-127, 1990.
2. Kluger R. *Ashes to Ashes: America's Hundred-Year Cigarette War, the Public Health, and the Unabashed Triumph of Philip Morris*. Vintage: New York, NY, 1996.

3. Lewit E *et al. Journal of Law and Economics*, 24(3):545-573, 1981.
4. Warner K. *Policy Analysis*, 5(4):435-450, 1979.
5. Lynch BS, Bonnie RJ. *Growing Up Tobacco Free: Preventing Nicotine Addiction in Children and Youths*. National Academy Press: Washington DC, 1994.
6. Goldman LK, Glantz SA. *JAMA*, 279:772-777,1998.
7. Hill D *et al. Tobacco Control*, 7(1):5-8, 1998.
8. Russell S, *San Francisco Chronicle* (on-line), 12/7/1998.
9. Teenage Research Unlimited, Summary Report 1-3/1999.
10. Flay BR. *AJPH* 77(2):153-160, 1987.
11. Pechmann C. In: *Changing Adolescent Smoking Prevalence: Where Is It and Why?* NCI Monograph: forthcoming.
12. Pierce JP *et al. JAMA* 280:893-899, 1998.
13. Wallack LM. *Contemporary Drug Problems*, Spring:49-83, 1980.
14. Balch GI, Rudman G. *JAMA* 280:323-324, 1998.
15. Worden JK *et al. JAMA* 280:323, 1998.
16. *MMWR: Morbidity and Mortality Weekly Report* 48(12):248-253, 1999.
17. Pechmann C, Goldberg M. *Evaluation of Ad Strategies for Preventing Youth Tobacco Use*. Final Report submitted to TRDRP for Grant #6RT-0038, 1998.

Over the years, **TRDRP** has funded a number of studies assessing the role and efficacy of both pro and anti-tobacco advertising in its many manifestations. Recent examples of such research include the following:

1. Evaluation of Ad Strategies for Preventing Youth Tobacco Use
(PI: Cornelia Pechmann, University of California, Irvine)
2. Effects of PSA Content and Formal Features on Smoking Norms
(PI: Michael Antecol, Stanford University)

TRDRP HIGHLIGHTS

AIM99 - Research in Action: A Decade of Progress

by *Susanne Hildebrand-Zanki*

December 2-3, 1999

This year's theme for our Annual Investigators Meeting (AIM99) is **Research in Action: A Decade of Progress**. TRDRP will host a series of events to celebrate Proposition 99 and 10 years of tobacco research and control in California. We are joined by the California affiliates of the American Lung Association, the American Heart Association, the American Cancer Society, the Health Kids Office of the California Department of Education, and the Tobacco Control Section of California's Department of Health Services who will be hosting a series of workshops on Thursday afternoon. Local Lead Agencies, Ethnic Networks, and Regional Linkages will participate in the Gala dinner and cultural extravaganza Thursday evening. This celebration will look back on 10 exciting years and will usher in the next decade of innovative tobacco research and control in California.

The conference will continue on Friday morning with the keynote address, which will be delivered by **Dr. Barry Levy**, Adjunct Professor of Community Health at Tufts University School of Medicine and Past President of the American Public Health Association. Dr. Levy is an internationally recognized author and speaker on health and environmental issues. Also on the program is what promises to be a very exciting panel discussion of **Anti-Smoking Ad Campaigns** and the different strategies employed in California, Massachusetts, Florida, and Australia.

Friday afternoon is devoted to scientific poster sessions where TRDRP-funded investigators will present their latest findings on a variety of tobacco use issues, including cancer, heart disease, interventions, lung disease, nicotine dependence, and policy research.

If you haven't done so, register now! **The pre-registration deadline is November 12, 1999**. However, on site registration will also be available.

SARA Workshops

Building on the success of the CARA (Community-Academic Research Award) mechanism, we are adding another participatory research award - **SARA** (School-Academic Research Award). This award is offered jointly by CDE and TRDRP, with CDE paying the costs for eligible school partners.

To launch the new award, TRDRP, in collaboration with the California Department of Education (CDE) - Healthy Kids Office, held a series of three all-day workshops in Oakland, Los Angeles, and San Diego during October.

The morning session was devoted to presentations of the current status of school-based intervention research, the Centers for Disease Control (CDC) guidelines for comprehensive tobacco control in schools, California's modified CDC guidelines, and a discussion of the gaps in our knowledge about effective school-based tobacco control.

In the afternoon, CDE and TRDRP staff introduced tobacco education professionals and scientists to the **SARA** mechanism. TRDRP staff led participants through the required components of a **SARA** and the criteria which will be used to evaluate applications.

The sessions were well attended. From the comments of the participants, it was clear that much work is still needed in the schools, where research efforts have waned during the early and mid 90's. It also became clear, that schools present a challenging research environment, which may also explain why fewer studies are initiated there. It is our hope that the **SARA** mechanism will provide investigators and school educators with the necessary resources to give the schools the research attention they require.

Application Deadline - January 20, 2000

TRDRP has issued its Call for Applications 2000. The Call outlines TRDRP's research priorities and the available funding mechanisms. We have made two important changes:

For research awards, the soft cap for research awards has been raised from \$150,000 to \$200,000 direct annual costs.

For dissertation awards, TRDRP now provides an additional \$10,000 for tuition, fees, fringe benefits, and health insurance.

The 2000 Application packets have been sent to contracts and grants offices of all institutions who have previously applied for funding and to individuals who specifically requested a copy. The application packet, including forms, is also available on our website (www.ucop.edu/srphome/trdrp/pubshome.html) The forms can be downloaded into Microsoft 7 for Windows.

Compendium

The 1999 Compendium of Awards is now available from TRDRP. It includes all 1999 grant recipients, their affiliations and abstracts describing their research projects. You can request a copy from our office or look for it on our website near the end of November, at : (www.ucop.edu/srphome/trdrp/pubshome.html)

5th Annual National Conference on Tobacco and Health

This year, TRDRP participated in the 5th Annual National Conference on Tobacco and Health on August 23-25, 1999 in Orlando, Florida. TRDRP sponsored a workshop **Multicultural Issues in Tobacco Control**, moderated by Phil Gardiner. Four TRDRP-funded investigators discussed their findings. Hope Landrine spoke about her research of the effect of racial discrimination on smoking behavior; Ky Quoc Lai elaborated on his cessation work in the Bay Area Vietnamese community; Rafael Laniado-Laborin talked about his research in familial influences on the smoking behavior of Latino adolescents; and Shu-Hong Zhu presented data on the utilization of the California Quit Helpline by Asian-Americans. The workshop was very well attended and stimulated many questions from the audience..



Tobacco-Related Disease Research Program
 University of California - Office of the President
 300 Lakeside Drive, 6th Floor
 Oakland, CA 94612-3550

TRDRP November 1999 Newsletter

TRDRP Newsletter

is a publication of the
 Tobacco-Related Disease
 Research Program
 Office of Health Affairs
 University of California
 Office of the President
 300 Lakeside, 6th Floor
 Oakland, CA 94612-3550
 Phone: (510) 987-9870
 Fax: (510) 835-4740
 e-mail: trdrp@ucop.edu
 www.ucop.edu/srphome/trdrp

The Tobacco-Related Disease Research Program (TRDRP) supports innovative and creative research that will reduce the human and economic cost of tobacco-related diseases in California and elsewhere.

TRDRP Staff

Director

Susanne Hildebrand-Zanki, Ph.D

Research Administrators

Jerome Beck, Dr.P.H.
 Epidemiology and
 Policy Sciences

Jeffrey Cheek, Ph.D.
 Biomedical Sciences

Phillip Gardiner, Dr.P.H.
 Social and Behavioral
 Sciences

Administrative Staff

M.F. Bowen, Ph.D.
 Carlin Colbert
 Sharon L. Davis
 Teresa E. Johnson
 Yuri Mok
 Carolyn Robinson

HOLD THESE DATES

DECEMBER 2-3
TRDRP - AIM 99

JANUARY 20, 2000
TRDRP Applications Due

CONFERENCES FOR 2000

FEBRUARY 18-20

Society for Research on Nicotine & Tobacco
 Arlington, Virginia

APRIL 5-8

Society for Behavioral Medicine
 Nashville, Tennessee

MARCH 1-4

**40th Annual Conference on Cardiovascular
 Disease, Epidemiology & Prevention**
 Arlington, Virginia

MAY 5-10

**American Lung Association/American
 Thoracic Society Conference**
 Toronto, Ontario, Canada

APRIL 1-5

**91st Annual Meeting of the American
 Association of Cancer Research**
 San Francisco, CA

AUGUST 6-11

**11th World Conference on
 Tobacco OR Health**
 Chicago, Illinois