

Changing Corporate Practices to Reduce Cancer Disparities

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Abstract: While reducing racial/ethnic and socioeconomic disparities in cancer mortality has been identified as a national goal, current policies are unlikely to achieve it. In order to advance the development of policies for the primary prevention of cancer and cancer disparities, we propose that the practices of the tobacco, alcohol, and food industries be considered as modifiable social determinants of health. We review evidence that the practices of these industries in product design, marketing, retail distribution, and pricing contribute to cancer risk behavior, incidence, and disparities, then examine public health strategies designed to reduce health-damaging practices of these industries and encourage healthier alternatives. We conclude with recommendations for research, practice, and policy that could contribute to the development of less carcinogenic corporate practices.

Key words: Cancer prevention, health disparities, health policy, primary prevention.

The United States has made eliminating racial/ethnic and other disparities in health a national goal¹ and the National Cancer Institute and the American Cancer Society have committed to reducing disparities in cancer incidence and mortality.^{2,3} To date, however, most cancer research has focused on secondary prevention and treatment. The evidence base for developing policies for the primary prevention of cancer is limited, making it more difficult to achieve significant progress towards the goal of reducing cancer disparities. Research shows that tobacco and alcohol use and diet play central roles in the etiology of many types of cancer,³⁻⁵ yet modifying behavior one person at a time has proven to be only modestly effective in reducing the incidence of new cancers. Compelling evidence suggests that the behavior of organizations such as governments and corporations also plays a central role in explaining the incidence and distribution of cancer.^{4,5}

More specifically, in this commentary we assess whether corporate practices, such as advertising, product design, pricing, retailing, and political lobbying for market

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advantage, might contribute to disparities in the incidence of cancer among different racial/ethnic and socioeconomic groups. In particular, we examine whether the practices of the tobacco, alcohol, and food industries might contribute to the incidence and distribution of lung, breast, cervical, liver, colon/rectum, prostate, pancreatic, and other cancers, which account for about half of U.S. cancer incidence and mortality and a significant portion of cancer disparities.^{2,3}

In the course of the paper, we consider corporate policies as social determinants of disparities in cancer incidence and mortality between racial/ethnic groups and between populations with higher and lower socioeconomic status. We identify and describe the pathways by which specific corporate practices contribute to disparities in cancer and discuss the societal costs that may be associated with these practices and their influence on population health. We conclude with a discussion of public health strategies that can be used to change corporate practices that increase access to and distribution of carcinogenic products. Our ultimate goal is to suggest research, policy, and practice directions that can reduce cancer incidence and disparities by changing the practices of the tobacco, alcohol, and food industries.

Disparities in Cancer Morbidity and Mortality in the U.S.

Despite recent progress in reducing the death rate from cancer, the U.S. still reports increasing cancer incidence in several major types of cancer and sharp racial/ethnic and socioeconomic disparities in incidence or mortality from lung, breast, cervical, liver, stomach, colon and other cancers.^{3,6} Several organizations, including the Institute of Medicine,⁷ the National Cancer Institute, the U.S. Department of Health and Human Services (DHHS),¹ and the American Cancer Society have made reducing or eliminating these disparities a major priority.

As shown in Table 1, the incidence and mortality rates for most major cancers related to tobacco use, alcohol, and diet are consistently higher for African Americans than for Whites. African American males have higher incidence and mortality rates than Whites for six of seven sites shown below, and African American females have higher incidence rates for four and higher mortality rates for seven of eight sites. Together, these types of cancer account for more than half of all estimated new cases and more than 60% of the estimated deaths in the U.S. in 2005. Latinos, Asian Americans, and Native Americans also have higher incidence and mortality rates from liver cancer than Whites have.^{3,6}

Socioeconomic status also contributes to disparities in cancer. In 1991, Dr. Samuel Broder, then Director of the National Cancer Institute (NCI), observed that “poverty is a carcinogen.”⁸ An NCI study comparing U.S. cancer mortality by county showed that poorer counties had higher mortality rates for colorectal and prostate cancer and that overall cancer mortality for men living in poorer counties was 13% higher than for men in better-off counties.^{9,10} Risk factors for cancer also vary by race/ethnicity and socioeconomic status.^{7,11,12} Those with incomes less than twice the poverty level are much more likely to be smokers than those with higher incomes;¹³ obesity levels are higher among African Americans and Latinos and lower-income groups than among their respective counterparts.¹⁴ While the proportion of alcohol users increases with

Table 1.**U.S. CANCER INCIDENCE AND MORTALITY, SELECTED SITES**

Type of cancer	Total estimated new cases 2005	Estimated deaths 2005	Black/white incidence ratios		Black/white mortality ratios		Evidence of causal factors related to tobacco (T), alcohol (A), or food (F)
			Male	Fe- male	Male	Fe- male	
Prostate	232,090	30,350	1.6	—	2.4	—	F(?)
Lung and bronchus	172,570	163,510	1.5	1.0	1.4	1.0	T
Colon and rectum	145,290	56,290	1.1	1.2	1.4	1.4	T,A,F
Urinary system	101,880	26,590	.5	.8	.7	1.3	T
Pancreas	32,180	31,800	1.4	1.5	1.3	1.4	T,F
Oral cavity and pharynx	29,730	7,320	1.3	0.9	1.9	1.3	T,A
Liver	17,550	15,420	1.7	1.5	1.5	1.4	A
Esophagus	14,520	13,570	1.4	2.0	1.6	1.9	T,A, F
Total	745,810	344,850					

Sources: Colditz GA, Samplin-Salgado M, Ryan CT, et al. Harvard Center for Cancer Prevention. Harvard report on cancer prevention, volume 5: fulfilling the potential for cancer prevention: policy approaches. *Cancer Causes Control*. 2002;13(3):199–212; American Cancer Society. (ACS) Cancer facts & figures for African Americans. Atlanta, GA: ACS, 2005; Schottenfeld D, Beebe-Dimmer JL. Advances in cancer epidemiology: understanding causal mechanisms and the evidence for implementing interventions. *Annu Rev Public Health*. 2005;26:37–60.

income, poor, Black and Hispanic problem drinkers are less likely to get help for these problems.^{15,16}

Many of the differences in cancer incidence have been attributed to differences in health behaviors such as tobacco, alcohol use, and diet. However, public health interventions designed to change individual behavior or modify environments at the community level have proven to be only modestly successful and have not served to reduce cancer disparities. By accelerating changes in behavior, it may be possible to achieve greater reduction in cancer;¹⁷ policy change may be a more effective acceleration tool than individual-level interventions. In fact, Link and Phelan¹⁸ and others have argued that strategies that rely only on providing individuals with health information can exacerbate rather than reduce disparities by providing greater benefits to those with more education and resources. The growing concentration of tobacco-related illnesses among low-income and African American and Latino U.S. populations illustrates this phenomenon.^{13,19}

In the last decade, epidemiological, public policy, and economic research has demonstrated that practices of industries such as the tobacco, alcohol, and food may contribute to behaviors and environments that increase cancer risk.^{20,21,22,23} During this same period, public health professionals, health and consumer advocates, and elected officials have worked to modify corporate practices that harm health.^{20,21,22,23,24} However, to date there has been little discussion about how corporate practices may influence cancer disparities, and there is a paucity of work that has presented public officials and public health departments with well-articulated policy options for primary prevention of cancer that move beyond individual behavior change. This commentary is an attempt to address this gap.

Addressing Social Determinants of Health in Order to Reduce Disparities

In recent years, health researchers and social epidemiologists have devoted new attention to the social determinants of health, studying how factors such as income, social status, education, employment, occupation, social and physical environments, culture, and stigma influence health, and developing various conceptual models to explain these relationships.^{25,26,27} Arguing that individual behavior and genetic influences account for only a portion of the burden of ill health, and that medical interventions and individually-targeted health education can have only a modest impact on population health, these investigators make the case for modifying social determinants as a strategy for primary prevention.^{28,29} Link and Phelan¹⁸ distinguish between fundamental (or underlying) and proximate causes of ill health and argue that health interventions that fail to address underlying causes of illness merely redistribute the burden of disease, often to more vulnerable populations. Modifying fundamental causes has the potential to reduce incidence of diseases such as cancer and, by targeting such interventions to the most vulnerable, to reduce disparities in health.³⁰

Research on disparities in cancer has identified various social determinants including poverty, less formal education, racism, and limited access to health care.^{7,31,32} Of these, disparities in access to and quality of health care have been best studied, showing that differences in screening practices, early intervention, and treatment contribute to disparities in cancer mortality.^{7,12,33} While this research suggests important priorities for health care policy, it does not address primary prevention of cancer. A few researchers have noted that differential targeting of lower socioeconomic status (SES) and ethnic/racial groups by the tobacco, alcohol, and food industries may contribute to disparities in cancer,^{20,34,35,36} but little systematic research has taken the practices of these industries to be a fundamental social determinant of health that could be modified to contribute to primary prevention of cancer. In the following section we summarize the available literature about practices of tobacco, alcohol, and food industries as determinants of cancer risk in an effort to identify both what we know about the influence of corporate practices, and gaps in our knowledge that may guide future research.

Practices of Tobacco, Alcohol, and Food Industries as Determinants of Cancer Risk

Tobacco. Tobacco use is the largest preventable cause of premature death and disease in the United States, accounting for an estimated 478,000 deaths per year.³⁷ About 30% of U.S. cancer deaths are attributable to active smoking, and tobacco use contributes to 16 types of cancer, including lung, colon and rectum, stomach, liver, and others.³⁷ Cigarette smoking causes more than 85% of lung cancer deaths.³⁷ Broadly speaking, without a tobacco industry that aggressively promotes and distributes affordable tobacco products, illnesses and deaths from tobacco use would decline precipitously. More narrowly, industry practices that have been linked to morbidity and mortality include advertising targeted at young people;^{38,39} product promotions and corporate sponsorships;⁴⁰ political opposition to clean air laws, tobacco excise taxes and publicly supported counter-advertising and other legislation;⁴¹ misrepresentation or withholding of scientific evidence on the health consequences of tobacco use;²³ and media campaigns emphasizing individual responsibility for tobacco use.⁴²

Alcohol. While hepatocellular cancer (HCC) is relatively rare, it is the most rapidly increasing type of cancer in the U.S., in part because of the spread of Hepatitis C virus, a predisposing factor.⁴³ Alcohol abuse leads to 32 to 45% of HCC cases in the United States.⁴⁴ In addition, recent research suggests that increasing incidence of diabetes mellitus and fatty liver disease may also contribute to HCC incidence,⁴⁵ suggesting a possible role for diet as well. Tobacco and alcohol in excess of three drinks per day interact to increase the risk of liver, breast, and colorectal cancers.³⁵ It is estimated that combined exposure to alcohol and tobacco account for at least 75% of U.S. cancers of the oral cavity, pharynx, larynx, and esophagus.³⁶

Alcohol industry practices associated with excess alcohol consumption include targeting advertising towards young people⁴⁶ and heavy drinkers, two groups that account for half the alcohol consumed in the U.S.; designing and marketing alcohol products to appeal to new markets, including young people; sponsoring sports events in order to create the norm that sports and alcohol go together;⁴⁷ making alcohol more available in low-income and Black and Latino communities,⁴⁷ and working in the political arena to oppose excise taxes, counter-advertising, and other alcohol control measures.²² These activities are designed to maintain alcohol sales and may therefore contribute to incidence of alcohol-related diseases.

Food. In research from the 1980s and 1990s, McGinnis and Foege⁴⁸ estimated that 14% of all deaths were attributable to diet and physical inactivity while, earlier, Doll and Peto⁴⁹ estimated that 35% of cancer deaths were attributable to diet alone. More recently, researchers have debated the extent to which diet influences either the incidence or progression of cancer.^{50,51}

An emerging consensus is that the previous approach that focused on the role of individual foods or nutrients (e.g., fiber, fat, Vitamin E), as either risk or protective factors, may oversimplify the complex role of diet in carcinogenesis. A more useful approach might be to look at overall composition and balance of diet and the quantity of overall food intake rather than single components. The emerging evidence that

obesity is a risk factor for cancer^{51,52} is cause for alarm, given the rapid rise in global obesity rates.

Several recent studies show a clear relationship between diet and cancer mortality. For example, Mai et al.⁵³ found that an overall diet in a national sample of U.S. women, measured by the Recommended Food Score as having a sum of 23 recommended food items, was inversely associated with overall mortality from cancer, and especially breast, colon/rectum, and lung cancers, as well as with incidence of lung cancer. Fairly consistent evidence suggests that diets high in fruits and vegetables may protect against cancer.^{17,54} The American Cancer Society cohort study estimated that the preventive impact of maintaining a body mass index (BMI) of less than 25 was a 15–25% reduction of cancer deaths in women and 10–14% in men, a total of 90,000 cancer deaths per year.⁵⁵

Unlike tobacco or alcohol, food is a necessary product for human health, and food producers have the potential to promote health. However, the food industry has consistently used product design, advertising, pricing, sponsorship of scientific research, lobbying, campaign contributions, and other strategies to influence individual dietary behavior in ways that support profitability but not human health.²⁰ Partly as a result, the American diet better reflects the food choices promulgated by the food industry than the food choices recommended by nutritionists.⁵⁶ As Nestle⁵⁷ has observed, the single most important nutritional health message for the American people is to eat less, yet the food industry has successfully opposed this message and dominates public discourse on food with the message to eat more. For example, by supporting professional nutrition organizations to endorse its views, by promoting voluntary rather than mandatory guidelines on school food sales and advertising to children, and by emphasizing physical inactivity rather than nutrition as the cause of obesity, the food industry has made it more difficult to reduce obesity rates.^{20,57} Recent research linking obesity and overall food consumption to various forms of cancer⁵² suggests that modifying industry practices that encourage obesity (in concert with increasing opportunities for physical activity) may be a promising strategy for primary prevention of several types of cancer.

In sum, it is estimated on the basis of epidemiologic studies, that in industrialized countries effective interventions to eliminate tobacco smoking and environmental tobacco smoke, to moderate alcohol consumption, and to reverse the rising prevalence of obesity would result in a 50% reduction in cancer mortality.⁴⁴ No other medical advances promise such potential.

Industry Practices as Determinant of Disparities

The above review suggests that the tobacco, alcohol, and food (TAF) industries use similar strategies to promote their products, to encourage higher levels of consumption, and to resist public efforts to reduce use. Previous work²¹ and a variety of evidence from industry-specific studies suggest that several TAF industry practices warrant further investigation for their role in increasing cancer risk. These include advertising,^{47,58,59} product availability through retail density,^{60,61} pricing,^{62,63} and political opposition to public health prevention policies that threaten profitability.^{20,64,65} Credible (if contested)

evidence demonstrates that each of these practices contributes to increased consumption of a cancer-causing product and the observed variability of these industry practices by population or community, suggesting a possible role in health disparities. Moreover, successful public health campaigns to modify these practices suggest the plausibility of policy interventions.^{20,21,66,67}

A few examples illustrate the breadth of this research. Research has demonstrated that

- Tobacco, alcohol, and food companies target advertising at Blacks and at lower-income communities, leading to greater exposure to health-damaging messages.^{35,47,68}
- Decisions about where to locate retail outlets and the density of such outlets result in differential access by socioeconomic status and race/ethnicity to unhealthy products such as tobacco, alcohol, and high fat foods and less access to healthy products such as fresh fruits and vegetables.^{61,62} For example, a study in Detroit found that the nearest supermarket was, on average, 1.1 miles further away from neighborhoods in which African Americans resided than from White neighborhoods.⁶⁹
- Product promotions and corporate sponsorships often target vulnerable groups.^{40,63}
- Existing government regulation (such as restrictions on the sale of single cigarettes, bans on indoor smoking, placement of tobacco and billboard advertising, or food safety rules) may be enforced differently in African American and low-income neighborhoods compared with White and better-off neighborhoods.^{34,70} For example, one California study found that underage Black and Latino youth were 2.5 times more likely to be sold cigarettes than their White counterparts.³⁴
- Vulnerable populations may have less access to public health campaigns that provide the knowledge and skills to reduce the impact of health-damaging industry practices.⁶⁸

These practices contribute to differences by race/ethnicity and class in use of cancer-causing products.^{46,71,72} Although a wide body of literature has demonstrated these differential exposures to tobacco, alcohol, and food industry practices and linked them to higher levels of cancer risk behavior, to date little research has compared the relative contribution of different practices across industries, attempted to assess the cumulative burden of these practices, or systematically examined the benefits of public policies designed to prevent cancer and other diseases by modifying tobacco, alcohol, and food industry practices.

A clear understanding of the mechanisms or pathways by which specific corporate practices contribute to cancer disparities and the relative magnitude of the cancer burden associated with different practices and industries could help to identify policy priorities for primary prevention. When combined with systematic analyses of the efficacy of strategies to change corporate practices, such information could provide health officials with evidence-based guidance for cancer prevention policies.

Strategies to Change Corporate Practices

In recent years, several organizations have mobilized to change the practices of the tobacco, food, and alcohol industries. For example, national advocacy organizations such as the Center for Science in the Public Interest and the Union of Concerned Scientists; professional organizations such as the American Cancer Society and the American Diabetes, Heart, and Lung Associations; state and local elected officials and health departments; and grassroots coalitions have all worked to force the withdrawal of unhealthy new products, to require companies to fund public health campaigns, to discourage use of unhealthy products by raising taxes or restricting access, and to restrict corporate influence in the political process.^{73,74,75} These campaigns have operated at the national, state, and local levels and used legislative, electoral, legal, media, and community organizing strategies.⁷⁴ While many scientists, journalists, and advocates have written about a single campaign or a single industry, only a handful of researchers have sought to compare efforts across two or more industries.^{73,74,76,77}

In some cases, these campaigns have targeted industry practices that contribute directly to disparities in cancer. For example, in Philadelphia, a coalition of African American, community, church, and health organizations led a campaign to force R.J. Reynolds Tobacco Company to drop plans for test marketing Uptown cigarettes, a brand aimed at African Americans.⁷⁹ Similarly, a coalition of Chicago Black and Latino groups and the attorneys general of several states worked together to force R.J. Reynolds to modify its Kool Mixx, a tobacco promotional campaign that used hip hop music to appeal to young Blacks and Latinos.³⁸ Also in Chicago, a neighborhood coalition and a university joined forces to advocate bans on alcohol and tobacco billboards in low-income communities of color.⁸⁰ Many communities have used land-zoning regulations to reduce the density of alcohol, tobacco, and fast food establishments.⁸¹ In other cases, community or health advocacy organizations have launched counter-advertising campaigns using African American or Latino images and themes designed to counteract industry's use of similar elements. In schools across the country, including many in big cities with high proportions of low-income students, parents and advocacy organizations are working to force food companies to end marketing of high-calorie low-nutrient foods within schools.⁸² Finally, some low-income neighborhoods have sponsored farmers markets in order to make fresh fruits and vegetables more accessible.⁸³

In sum, public health campaigns to modify TAF industry practices that increase cancer risk are a promising strategy for the primary prevention of cancer. By focusing attention on this domain of practice, conducting systematic studies of the efficacy of various intervention strategies, and better documenting the many existing efforts to change industry practices, researchers and health professionals can bring evidence-based lessons to policymakers that would assist them in selecting policies to maximize the potential for primary prevention of cancer and the reduction or elimination of cancer disparities.

Conclusion

In this commentary, we have articulated the role that corporate policies and practice may play in shaping disparities in cancer morbidity and mortality, highlighted the societal costs that may be associated with these corporate practices, and summarized some efforts that have been used successfully to influence corporate practices for the purposes of improving population health. We conclude with recommendations for research, policy, and practice based on these observations.

First, epidemiologic research about the consequences of corporate practices remains in its infancy. Although, to some extent, it is self-evident that within a market-driven economy corporate practices will influence consumer behavior and consumer health, there are very few empirical studies that have explicitly considered the relation between corporate practices and health in such a way as to provide quantitative estimates of the role of these practices as health determinants. Public health inquiry about the contribution of factors at multiple levels of influence has grown tremendously in recent years, spurred both by a renewal of interest in the social production of health and disease, and by advances in analytic techniques that allow us to examine the contribution of factors at multiple levels empirically. However, apart from some research about corporate practices related to tobacco, limited empirical inquiry has systematically examined the role of corporate practices in the cancer outcomes discussed here. We suggest that future work seek to quantify the burden of cancer attributable to specified corporate practices (e.g., marketing, pricing), much as McGinnis and Foege⁴⁸ have estimated the burden of mortality attributable to individual behavior.

Second, there are several areas in which health policy can be brought to bear on the issue of corporate policies producing health, illness, and disparities. Health policy practitioners and researchers as well as professional groups such as the American Cancer Society must work toward introducing health into the political discussion about corporate and product regulation. By joining the government-corporate decision-making axis, health policy researchers and advocates can contribute to encouraging healthy corporate practices and discouraging less healthy ones. Health policy efforts can also be directed toward direct engagement in shaping product design and manufacture. Historically, the role of public health in influencing corporate practices with respect to health has focused more on occupational and environmental than on consumer health. By analyzing successes and limitations in protecting workers' health and the environment against corporate harm, it may be possible to learn lessons relevant to the primary prevention of cancer and cancer disparities.

Third, public health practitioners can support policies that promote healthy consumption patterns and combat less healthy ones. For example, public health efforts in the past have been successful in limiting advertising to children of clearly unhealthy products such as cigarettes or alcohol^{84,85} but so far have failed to regulate food advertising successfully. These efforts have gone further in some countries than they have in the U.S. For example, based on the principle that marketing messages have a duty to provide accurate information, Canadian cigarette packaging has long carried stark warnings about the deleterious consequences of smoking and images of tobacco-related

diseases. These warnings must cover half of the front and back of the package. In addition to regulating marketing efforts, people in the world of public health can be engaged in their own efforts to use market forces to counter potentially harmful influences of corporate practices. The recent successes of the Truth campaign to limit youth tobacco use illustrate the potential for counter-advertising that challenges industry manipulation of vulnerable populations.⁸⁶

Fourth, public health professionals and researchers can join efforts to re-frame primary prevention of cancer as an achievable goal that requires policy change. Previous research on public health communications suggests that health campaigns that raise issues of fairness and justice, that focus on protecting children, and that use existing, trusted channels and networks for mobilization are effective in bringing about policy change.^{73,74,87} By applying these lessons to the primary prevention of cancer, health professionals can contribute to more effective campaigns for the elimination of cancer disparities.

Fifth, health professionals must be persuaded that it is both possible and necessary to move beyond secondary prevention of cancer and a narrow focus on improving access to cancer screening and counseling. By demonstrating that it is feasible and practical to identify and modify the more fundamental determinants of cancer incidence and disparities, it may be possible to engage health professionals in the acceleration of reductions in the overall and disparate burden of cancer on various populations.

In sum, substantial evidence shows that practices of the tobacco, alcohol, and food industries contribute to cancer incidence and to socioeconomic and racial/ethnic disparities in cancer morbidity and mortality. Other evidence suggests that changing such corporate practices can reduce consumption of carcinogenic tobacco, alcohol, and food products. Making the reduction of tobacco, alcohol, and food corporate practices that contribute to cancer a research and policy priority offers significant promise of achieving national cancer goals, given high rates of cancer, wide socioeconomic and racial/ethnic disparities in certain types of cancer, and limited success to date in primary prevention of cancer.

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