

The Influence of Health Disparities on Targeting Cancer Prevention Efforts

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Abstract: Despite the advances in cancer medicine and the resultant 20% decline in cancer death rates for Americans since 1991, there remain distinct cancer health disparities among African Americans, Hispanics, Native Americans, and the those living in poverty. Minorities and the poor continue to bear the disproportionate burden of cancer, especially in terms of stage at diagnosis, incidence, and mortality. Cancer health disparities are persistent reminders that state-of-the-art cancer prevention, diagnosis, and treatment are not equally effective for and accessible to all Americans.

The cancer prevention model must take into account the phenotype of accelerated aging associated with health disparities as well as the important interplay of biological and sociocultural factors that lead to disparate health outcomes. The building blocks of this prevention model will include interdisciplinary prevention modalities that encourage partnerships across medical and nonmedical entities, community-based participatory research, development of ethnically and racially diverse research cohorts, and full actualization of the prevention benefits outlined in the 2010 Patient Protection and Affordable Care Act. However, the most essential facet should be a thoughtful integration of cancer prevention and screening into prevention, screening, and disease management activities for hypertension and diabetes mellitus because these chronic medical illnesses have a substantial prevalence in populations at risk for cancer disparities and cause considerable comorbidity and likely complicate effective treatment and contribute to disproportionate cancer death rates.

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Health Disparities

Health disparities are differences in the incidence, prevalence, mortality, and burden of disease and other adverse health conditions among specific groups in the U.S. These groups may be based on race or ethnicity, gender, education, SES, or other criteria. Health disparities among ethnic minorities, the poor, and the medically underserved are well documented. There are disparities for overall longevity measured by life expectancy and for specific chronic and acute diseases.

Despite improving life expectancy and declines in death rates, there are considerable and persistent disparities for minorities. Life-expectancy data show a 3.7-year gap between whites and African Americans in

2011 with evidence of a consistent narrowing.¹ Murray and colleagues examined mortality disparities in eight subgroups of the U.S. population, revealing significant disparities in mortality.² This was most pronounced for African-American men, who experienced a 20.7-year life expectancy gap, compared to Asian women, who had the best overall survival. Among men, there was a 15.4-year survival gap between the best-off Asian American men and African-American men residing in high-risk urban areas. There was a 12.8-year survival gap between Asian American women and low-income southern rural African-American women. This study also documented that the disparities in mortality was largest among young (ages 15–44 years) and middle-age (ages 45–64 years) African Americans. The causes of this excess mortality included injuries, cardiovascular disease, diabetes mellitus, and other noncommunicable diseases.²

The causes of excess mortality for young and middle-aged African Americans are also sources of disparate disease burden and death among other American minorities. Native Hawaiians/Pacific Islanders and Hispanic adults are diagnosed with diabetes at rates three times and 1.7 times higher than non-Hispanic whites. American

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Indian/Alaska Natives adults are diagnosed with heart disease at rates twice that of non-Hispanic whites. In association with chronic medical illness, 14.4% of non-Hispanic blacks are disproportionately severely disabled compared to non-Hispanic whites (12.4%); Hispanics (8.7%); and Asians (7.6%).³

The cause of health disparities clearly involves the conjoined influences of the environment, behavior, sociocultural factors, and biology (the genome and epigenome) on individuals from birth (Figure 1). The dysfunctional interaction of these factors ultimately results in the accelerated aging phenotype of health disparities, which is characterized by the early appearance of age-associated disease that in turn complicates cancer diagnosis and treatment planning, ultimately resulting in premature death and differential 5-year survival. This disparate life span may be marked by early cancer initiation, promotion, and transformation events caused by low SES, environment, diet, exposures, or biological factors that are part and parcel of the health disparities phenotype.

Perhaps the most potent nonbiological factor influencing the development of health disparities is poverty. Poverty conditions the environment as well as induces some of the behavioral and sociocultural factors that are present at birth and exerts profound influence over the entire life course (Figure 1). Poverty sets the stage for low educational and occupational achievement, unhealthy behavioral habits, and poor housing, all of which directly affect health, the differential development of chronic diseases including cancer, and ultimately shorter life

expectancy. Detrimental unhealthy behaviors like smoking directly affect health disparities in general and cancer health disparities specifically. The prevalence of tobacco use is higher among low-SES groups, increasing the risk of death and disability.⁴ Various studies have shown that much of the differential death rate attributed to SES is related to tobacco use.⁵ Although African Americans in general may smoke less than non-Hispanic whites, the SES differential in smoking, the prevalence of poverty, and the greater susceptibility to smoking-induced cancer among African Americans documented in some studies influences cancer disparities, highlighting the importance of behavior and its interaction with genotype as highlighted in Figure 1.^{6,7}

With this background, a discussion of health disparities in the setting of cancer prevention raises a broad spectrum of issues, including cancer health disparities and how these disparities influence the success and effectiveness of prevention efforts, specific relevant barriers, and appropriate methods to negotiate these barriers. To this end, this topic will be discussed in the framework of specific cancer health disparities, cancer prevention in populations at risk with a focus on system, cultural, and community-based cancer prevention strategies. Identifying and negotiating the barriers of effective cancer prevention in the context of health literacy, cultural competence, and mobile health technologies is outlined. Finally, this article highlights the future gains that may accrue from full implementation of the Affordable Care Act and enhancement of initiatives that focus on integration of cancer prevention into ongoing health promotion initiatives for chronic disease.

Cancer Health Disparities

There are considerable disparities in cancer incidence among selected minority groups and non-Hispanic whites. African-American men have a 14% higher incidence of cancer when compared to white men; however, African-American women have a lower cancer incidence than white women. American Indians/Alaska Natives, Asian/Pacific Islanders, and Hispanics have overall incidence rates lower than both whites and African Americans. Age-adjusted Surveillance, Epidemiology, and End Results (SEER) incidence

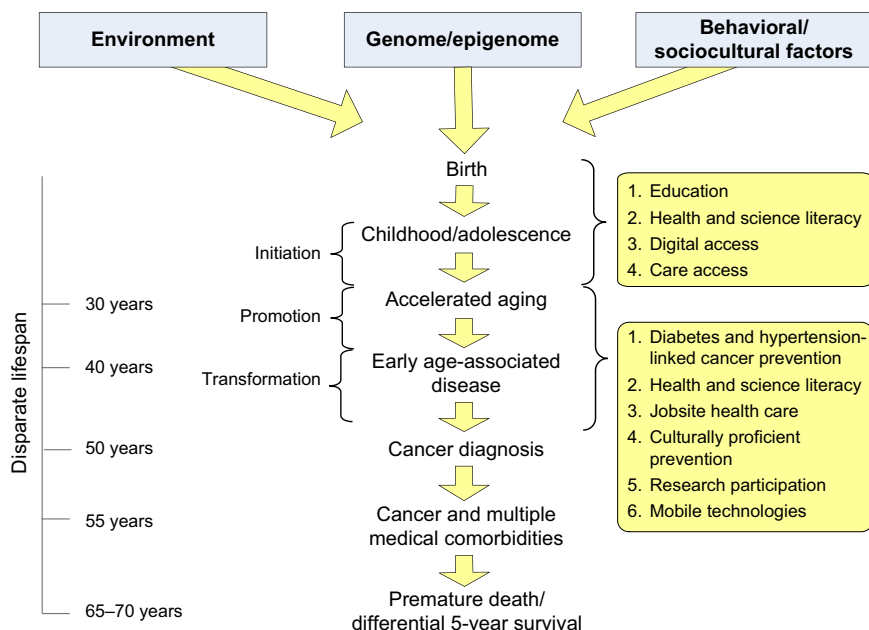


Figure 1. Cancer prevention in a Health Disparities Framework

rates were 471.9/100,000 for whites; 483.6/100,000 for African Americans; and 356.7, 323.6, and 307.4/100,000 for Hispanics, American Indians, and Asian/Pacific Islanders, respectively. Incidence rates for the most frequently occurring cancers shows that in men prostate cancer is the most common among all racial and ethnic groups.⁸ African-American men have the highest incidence at 96.3/100,000 compared with 66.1, 35.5, 34.3, and 55.2 for whites, Asian/Pacific Islanders, American Indian/Alaska Natives, and Hispanics, respectively. A similar pattern of incidence is present for breast, lung and bronchus, and colon and rectum cancers.⁹

As noted, cancer incidence rates are lower in selected minority groups compared to whites, except that for many cancers associated with infectious agents, the reverse is the case. These cancers include the uterine cervix, stomach, and liver. However, once acculturated after living within the U.S. for extended periods, rates for the four most common malignancies begin to increase among these groups.^{10–12} However, it should be noted that although the overall incidence of cancer in American Indian/Alaska Natives is lower than non-Hispanic whites, when incidence rates are examined geographically, there are significant differences in incidence between American Indians/Alaska natives and non-Hispanic whites, especially in the Northern Plains and Alaska.^{13,14} As mentioned earlier, race and ethnic heritage are not the only factors that influence cancer incidence. There are widely described socioeconomic determinates of cancer. Cancer incidence rates clearly delineate that social inequality as well as SES is linked to cancer in both first and third world countries.¹⁵ The risk of developing a number of cancers is higher the lower one is on the socioeconomic ladder. These include colon, bone melanoma, breast, ovarian, and cervical cancers.¹⁶

The differential risk of developing certain malignancies is influenced not only by sociocultural factors but also by obesity. In recent years, the evidence has convincingly highlighted the role of obesity in cancer incidence as study after study correlated obesity with incidence for several cancer types, including colon, liver, breast, and kidney among others.¹⁷ The role of diet and nutrition may be particularly important factors in cancer risk among vulnerable populations. Approximately 68% of American adults are overweight or obese.¹⁸ Obesity rates vary considerably among non-Hispanic whites and minority subpopulations; for example, non-Hispanic black women (49.6%) and Mexican-American women (45.1%) are significantly more likely to be obese than non-Hispanic white women (33.0%). There are also differences in obesity rates between men of different racial and ethnic groups. These disparities in obesity contribute to differential incidence rates of cancer among minorities.

Cancer death rates have declined in all population groups amid the overall 20% cancer death rate decline documented in the United States (24% in men and 16% in women) between 1990/1991 and 2009.¹⁹ Annual declines in the overall cancer death rate during 2000–2009 were actually highest among African-American men (2.4%) and Hispanic men (2.3%). The overall death rate decline in non-Hispanic white men was 1.7%. The declines for African-American and white women were similar (1.5% vs 1.4%). There were also significant declines for Hispanic women (1.4%) and Asian American/Pacific Islander men and women (1.5% and 1.1% decline, respectively). However, there was no decline in death rates among American Indians/Alaska Natives.

Despite this progress, death for all cancers combined for the period 1975–2009 show a disparate proportion among African Americans compared to non-Hispanic whites. African-American men have a 33% higher death rate when compared to white men whereas African-American women have a 16% higher cancer death rate. The largest disparities result from the substantially higher death rates for cancer of breast and colorectum in women and colorectal carcinoma, lung, and prostate death rates in men.²⁰ Death rates for all cancer sites combined and the four most common cancer sites combined are lower among other American racial/ethnic groups (e.g., Hispanics) than those for African-American and non-Hispanic whites. However, for cancers linked with infectious agents (e.g., *Helicobacter pylori*, hepatitis B virus, and human papillomavirus) there are higher death rates in selected minority subgroups, including Asian American/Pacific Islanders and Hispanics, when compared to non-Hispanic whites.^{19,21} African-American 5-year survival rates are lower for almost every cancer site.¹⁹ Although Hispanics have 5-year cancer-specific survival rates similar to non-Hispanic whites for most cancers, cancer mortality rates for Hispanics are higher for cancers of the gallbladder, stomach, liver, and bile duct.

As is the case with cancer incidence, the disparities in cancer mortality are not solely related to race and ethnicity; socioeconomic factors are inextricably intertwined as etiologic and disease promotion or progression agents. Freeman and Chu consider the interaction of social injustice, culture, and poverty as critical factors that interfere with and impede effective cancer prevention and early detection. Consequently, low SES and perhaps race and ethnicity influence treatment and survival rates.²² For example, the black–white disparities in breast cancer mortality have been shown to be linked to barriers of poverty (access to care, health insurance, competing survival prioritization and others); medical mistrust; as well as perceived racial prejudice.²³

Cancer mortality rates are also driven by obesity, which may account for some of the disproportionate impact of specific cancers.^{24,25} For example, obesity increases prostate-specific cancer mortality and is linked with increase in aggressive prostate cancer pathology.²⁶ Increased body weight may act as a promoter of important factors that enhance progression.²⁷ Several studies have also shown that obesity is a major factor in post-menopausal breast cancer and colorectal cancer death rates, treatment efficacy, and survival.

Cancer Prevention in At-Risk Populations

In the face of these differential incidence and mortality rates, prevention and screening efforts to reverse these trends have had varying degrees of success. Rates of mammography screening have increased for women in all racial and ethnic groups since the late 1980s.²⁸ In 2008, among African-American women 40 and older, approximately 67.7% reported undergoing mammograms within the 2 years. In this same group, only 52.2% were tested in the past year despite then guidelines recommending yearly testing and despite the fact that African-American women frequently have deadlier breast cancers at younger ages. Mammography use has grown among non-Hispanic blacks (78.6%) but continues at low rates of mammography among American Indian/Alaska Natives (63.9%); those with annual household income \leq \$15,000 (63.2%); and those with no health care (50.4%).²⁹ Colorectal cancer screening rates have increased tremendously among African-American men and women since the late 1980s when both groups were examined at extremely low rates (18% and 15%, respectively).³⁰ The 2008 National Health Interview Survey documented increasing rates of colorectal cancer screening for African Americans to 49% compared to 56% for non-Hispanic whites. The Behavioral Risk Factor Surveillance System reported that non-Hispanic whites and African Americans had comparable rates of colorectal cancer screening (66.3 and 65%, respectively).³¹ However, screening rates were substantially lower for Hispanics and those with low educational attainment and low SES.

System-Based Prevention Strategies

Persistent disparities suggests that a successful prevention strategy must include myriad other prevention and early treatment strategies that are culturally appropriate and targeted to the unique aspects of the populations at greatest risk for disease development. In populations with ongoing major health disparities, screening is the key to decreasing the proportion of advanced stage at diagnosis cases. Farley and colleagues³² have noted that

only a small increase in mammography use, perhaps 5%, could prevent approximately 500 breast cancer deaths each year. RCTs have established valid and efficacious strategies, many of which emphasize participation in cancer screening by using culturally and linguistically appropriate messages as well as trained culturally reliable messengers. For example, *Ayudando a las Mujeres con Informacion, Guida, y Amor para su Salud (AMIGAS, "helping women with information, guidance, and love for their health")* is an RCT examining the effectiveness of trained lay health workers (*promotoras*) in improving Pap test screening among three populations of women from Mexico.³³ The intervention increased Pap test screening in Mexican women residing in three different types of residential areas. Other RCTs also focused on increasing breast and cervical cancer screening in diverse groups of African-American, Latina, Asian, Arab, and rural women using community-based participatory research (CBPR), faith-placed research intervention, patient navigators, and lay health workers with variably packaged educational modules.^{34–39}

Community and Culturally Based Prevention Strategies

Cancer prevention efforts using community members to help design and implement those efforts appear to be closing the screening gap between non-Hispanic whites and other groups. Additionally, community outreach through coalitions and churches are promising despite needing further evaluation.^{40,41} These efforts combine the benefits and talents and training of professional and lay workers to make accessible all cancer prevention resources to as many vulnerable populations as possible.

One of the best examples of using community resources is the use of community members and/or paraprofessionals, broadly defined as community health workers or lay health advisors.^{42,43} These laypersons work in paid or volunteer positions. They provide health education and health promotion activities in a culturally and linguistically competent manner as members of the community who share language or racial/ethnic heritage with the community they serve. Whether they are called community health workers, lay health advisors, peer health educators or *promotores*, they provide valuable resources for community-based research as well as cancer prevention and screening activities. Several studies have examined how using community health workers improves cancer education and cancer screening rates among Latinas, Appalachian women, African-American women, and other minority groups.^{42,44–47} The literature also suggests that the community health workers were underutilized because the scope of their roles was narrow.

Full utilization of this valuable resource by expanding their roles may provide the cross-community linkage needed to address racial/ethnic disparities in cancer.⁴³

The use of CBPR is important to highlight in this setting. Implementing research that respects the community and its institutions is among the best methods for enhancing community awareness of cancer prevention. This method also increases minority participation in cancer prevention trials, which may also yield permanent changes in health behaviors among populations at increased risk. An excellent example of this approach is the work done by the Center for Interdisciplinary Health Disparities Research in exploring the differences in breast cancer mortality among African Americans and whites in Chicago.⁴⁸

Challenges and Evidence-Based Solutions to Improve Minority Representation

Future RCT and CBPR studies should validate these models in larger cohorts, especially among minority men who are most at risk and are the most difficult to recruit. They should also examine cost effectiveness, evaluate the mechanisms through which these effective interventions achieve improved compliance with screening, and most importantly propel implementation of the methodology into clinical practice settings.

Although some randomized clinical trials in cancer prevention research have focused repeatedly and specifically on minority populations, consistent inclusion of vulnerable populations has been more limited. Just as minorities are frequently underrepresented in cancer treatment trials, they remain appreciably underrepresented in cancer prevention studies.⁴⁹ Although well funded as a randomized trial to evaluate the effectiveness of screening, the Prostate, Colorectal, Lung and Ovarian (PLCO) screening trial failed to recruit African Americans, Hispanics, or Asians in proportions that were representative of age-eligible individuals in the overall U.S. population or in their catchment areas. Of the 155,000 participants, 5% were African American, 1% were Hispanics, and 3.6% were Asian.⁵⁰ The considerable challenge of recruiting minority population into chemoprevention trials requires an ongoing iterative examination that pinpoints the barriers to participation for different studies.

The Centers for Population Health and Health Disparities (CPHHD) initiative identified several factors that influence minority recruitment and retention, including use of multiple recruitment sites, culturally appropriate invitations, flexible study designs, and perhaps most importantly the ability to modify recruitment strategies during the course of the study.⁵¹ Aware of the critical

need to recruit minority women into the Study of Tamoxifen and Raloxifene (STAR) trial, the National Surgical Adjuvant Breast and Bowel Projects (NSABP) Breast Cancer Prevention Trial (BCPT) used real-time assessments to evaluate success and failure of recruitment efforts.⁵² STAR investigators did not wait until the study was completed to assess inconsistencies between the actual recruitment and the predicted eligible percentage of the population. The investigators monitored recruitment among minority women. This allowed them to identify and negotiate the barriers to participation and make important operational changes to improve recruitment of targeted populations while the study was still ongoing. This active and iterative approach improved minority accrual rates in NSABP's previous Breast Cancer Prevention Trial from 3.5% to 6.5% in STAR.

It is likely that these intensified efforts increase the cost of research studies. If the goal is to improve recruitment and retention, the excess cost may be justified if the strategies employed are effective. Other studies not only track this specialized recruitment success in real time but also assess the cost effectiveness of each modality employed so that they can more accurately target limited research dollars for maximal recruitment benefit.⁵³ Our own work in developing an observational longitudinal study on the influence of race and SES on the development of age-associated health disparities among middle-aged residents of Baltimore outlines important barriers that are as relevant and applicable in observational clinical research as in cancer prevention research.⁵⁴ Three broad areas of barriers were identified that operate in close contiguity: individual-based barriers, community-based barriers, and researcher-based barriers. Individual barriers include medical mistrust, low literacy, low health literacy, economic constraints, multiple comorbidities, behavioral and social issues, and transportation among others. There are also community-based barriers that include safety, neighborhood health literacy, education, and fear of exploitation. Finally, there are perhaps the most difficult to address barriers: those presented by researchers themselves, including personal biases and lack of community membership and community perspective.

Negotiating the Barriers to Effective Cancer Prevention

Health Literacy and Cancer Prevention

Health literacy is "the degree to which individuals can obtain, process, and understand the basic information and services they need to make appropriate health decisions."⁵⁵ In 2004, the IOM estimated that almost 90 million U.S. adults had low levels of health literacy.⁵⁶ Work by multiple

groups has linked health disparities and multiple chronic illnesses or comorbid conditions to low levels of literacy.^{57–60} Reading and numerical skills are required to function effectively in healthcare environments. Low levels of health literacy are independent risk factors for untoward health outcomes, including re-hospitalization for heart failure.^{61,62} Those with low educational attainment have more difficulty processing the relevance of and adhering to medical prescriptions.^{63,64}

Just as health literacy is a focal point in health disparities research, it is also a focal point of cancer prevention efforts especially among young adults, who might benefit most from effective cancer prevention efforts. The barriers for effective cancer screening include patients' abilities to understand the benefits of screening procedures, mistrust of healthcare providers, differences in knowledge between the provider and patients, and the inability of providers to bridge this knowledge gap by adequately addressing the expressed concerns. These factors are among those that have driven the inequality of effective and consistent cancer prevention in minority populations.^{65–67} The complexities of cancer and the nuances increasingly associated with screening guidelines lead to confusion among well-educated high-SES populations, particularly when guidelines change over time.⁶⁸ Individuals with low educational attainment often have difficulty navigating cancer screening recommendations, which are complex. Only 50% of low-literacy patients referred for colorectal screening completed the test.⁶⁹ Those with low literacy are considerably less likely to participate in routine cancer screening and prevention.^{70,71}

Cultural Competency and Doctor–Patient Communication

Failure to understand the principles of cultural competence and modify care patterns accordingly has substantially detrimental effects on health outcomes for individuals and for communities.⁷² Providers are responsible for developing culturally competent relationships with patients; the quality of these relationships has direct bearing on health outcomes. There is a discrepancy in the provider–patient relationship such that physicians build productive relationships with more educated and affluent non-Hispanic whites, whom they may view as more like themselves. This discrepancy results in stereotyping and bias.⁷³ Healthy relationships between healthcare providers and patients improve communication and build trust.⁶⁵ Understanding individuals' and communities' cultural contexts are equally important or perhaps even more important for clinical investigators. Research-related clinical competence is recognizing and responding appropriately to key cultural features that affect clinical

research or clinical care.⁷⁴ In cancer prevention, cultural competence is particularly crucial because highly emotional discussions about cancer may have cultural overtones and stigma associated with potential diagnoses.⁷⁵

The role of providers in improving adherence to cancer screening is undeniable. A physician can influence a patient's decision to undergo cancer screening.⁷⁶ Cancer prevention research and interventions should focus on the provider's acculturation and linguistic appropriateness as well as training the provider to use communication methods and skills that will enhance their relationships with their patients.⁷⁷ RCT studies should examine the best ways to dispel individual fears and mistrust among patients, gain true informed consent for screening procedures, and provide information from sources relevant to minorities, the poor, and people with low educational attainment.

Mental Health Challenges in At-Risk Populations

There are considerable challenges in cancer screening, prevention, and treatment among individuals with poor or dysfunctional mental health.^{78,79} These challenges are exacerbated among those who are members of minority ethnic and racial groups.⁸⁰ There is only sparse literature about these issues for those whose vulnerabilities are amplified by their dual status as members of minority groups with mental illnesses. There are substantial health disparities associated with psychiatric disorders such that those with mental illnesses have greater numbers of more severe comorbid somatic conditions than those without psychiatric conditions.⁸¹ In addition, cancer screening is much less common among those with psychiatric illnesses. However, there are no studies on the modifying effects of racial status or SES on the association of depressive symptoms with cancer screening participation. Despite lower mammography rates in underserved populations, there is no evidence that mental illnesses are associated with mammography screening rates in a primary care setting.⁸²

The Challenge of Multiple Comorbidity

The overall health status of Americans in general has changed with the aging of the population and the emerging prevalence of obesity and type 2 diabetes mellitus in younger age groups. The National Center for Health Statistics data show that over the past 10 years there is increasing prevalence of two or more chronic conditions among adults aged 45–64 years and among adults aged ≥ 65 years. This increase in prevalence is present in men and women as well as among all racial

and ethnic groups studied.⁸³ Approximately 21% of adults aged 45–64 years have two or more chronic medical conditions. For populations at risk for health disparities, non-Hispanic black adults had a higher prevalence of two or more chronic conditions when compared to non-Hispanic whites.

Those living in poverty had a prevalence twice that of those living at or above 400% of the poverty level. The co-occurrence of hypertension and diabetes mellitus occurs in approximately 2.4% among non-Hispanic white adults.⁸⁴ However, the percentage is greater than or equal to double that among African-American (6.1%) and Mexican American adults (4.9%). The presence of multiple chronic conditions adds a considerable level of complexity to the development and implementation of efficacious cancer prevention strategies. In fact, the rates of comorbidity in the U.S. population overall present a major challenge to healthcare delivery in general.⁸⁵ As Parekh and Barton call for increased care coordination and realization that modern medicine has created disease “silos” that focus on one chronic condition instead of the comorbidity complex, cancer prevention practitioners must confront these same issues and find ways to interdigitate prevention into ongoing care of comorbid illnesses.

Tools for Cancer Prevention Research

Mobile Health Technologies

Although there is a digital divide in computer ownership and home Internet access based on geographic location within the U.S. (urban versus rural), age, income, and education, there is clear evidence that the Internet is widely available to populations at risk for disparity. African Americans, other minorities, and low-SES populations may have less access to home-based high-speed broadband but they may compensate by using public sites such as community libraries or by using Internet-enabled mobile phones. More than 80% of the world has access to cell phones.⁸⁶ The penetrance of cell phones is so deep that in U.S. cities, almost 50% of the homeless have access to cell phones. Currently 83% of U.S. adults own a cell phone; 47% of African Americans and 49% of Hispanics own smartphones compared with 42% of non-Hispanic whites according to the Pew Research Center. Approximately 25% of those with smartphones use them as a primary source of Internet access. Among cell phone users, 73% use text messaging; however, text messaging utilization is much higher among African Americans and Hispanics compared to non-Hispanic whites. Studies among young, urban African Americans, rural whites, and Hispanic women demonstrated interest in receiving information about health issues (including breast cancer) via text messaging or cell phone.^{87–89} Data on technology

adoption by minority populations suggest that this avenue must be pursued to eliminate cancer health disparities.

The Affordable Care Act

The Patient Protection and Affordable Care Act (ACA) provides insurance reform, improved access to care, and improved quality of care. Importantly, it implements initiatives to eliminate health disparities. The ACA requires collecting self-report data particularly relevant to cancer health disparities on race, ethnicity, gender, disability status, and language. The ACA has cancer-specific measures that affect cancer care delivery and cancer prevention. The law addresses mandatory coverage of prevention services including smoking cessation, weight loss, and promotion of healthy behaviors in addition to cancer screening. ACA provisions such as the essential health benefits package, state healthcare workforce development grants, and other parts of the law will potentially eliminate barriers to preventive health screenings that are essential in achieving lower cancer death rates among those at highest risk.

Clinical preventive services denoted as Grade A or B by the U.S. Preventive Services Task Force (USPSTF) are covered by the ACA, easing access to care and lowering out-of-pocket expenses. This is especially important given that lack of insurance and low income are two important barriers identified for both breast and colorectal screening among women and minorities.^{29,31} The challenge for the cancer prevention community is to remain a vital voice in the implementation phase of ACA and to highlight inadequacies as the basis for future amendments or revisions of specific provisions. For example, Moy and colleagues⁹⁰ point out that USPSTF cancer screening recommendations are based on data from non-Hispanic whites not minorities because to date there is little data about optimal screening in minority populations for malignancies with disparate impact on minority populations. This is an area for further research by cancer prevention specialists.

Integration of Cancer Prevention Into Ongoing Health Promotion Initiatives

Our view of cancer health disparities must be considered in the context of overall health disparities. The leading cause of death for all Americans remains cardiovascular disease; however, cancer is the leading cause of death for those aged 45–64 years, with cardiovascular disease a relatively distant third.⁹¹ Consequently, combining cancer prevention with efforts to control blood pressure and reduce salt intake might have an additive effect on the reduction in health disparities overall given the very high

rate of stroke and cardiovascular morbidity and mortality experienced by African Americans in middle age.

Fusing cancer prevention efforts with cardiovascular disease risk factor screening is not a new idea. In 1993, Congress authorized WISEWOMAN (Well-Integrated Screening and Evaluation for Women across the Nation) to provide preventive health services to women who had already participated in another screening initiative, the National Breast and Cervical Cancer Early Detection Program (NBCCEDP).⁹² The goal of WISEWOMAN is to reach out to low-income, uninsured women (ages 40–64 years) to control cardiovascular risk factors and improve cardiovascular health. Women in this study receive screening for breast and cervical cancer along with the cardiovascular screening at the same appointment. The value of WISEWOMAN is that it successfully reaches at-risk women and addresses screening and health promotion in both cancer and cardiovascular disease simultaneously.

Cancer Prevention and Education

The link between educational attainment and health outcomes cannot be overstated. The clearest evidence that education must be a high priority in the U.S. comes from Olshansky and colleagues' recent work highlighting the direct connection between education and life expectancy among minorities as well as non-Hispanic whites.⁹³ Analyses of life expectancy in 2008 revealed the presence of two Americas demarcated by level of education and race. Those with less than 12 years of education had life expectancies comparable to those in the middle of the 20th century. Differences in education produced expected gaps between African Americans and non-Hispanic whites in life expectancy (white men with greater than 16 years of education enjoyed 14.2 additional years of life expectancy than African-American men). The least educated in American society are experiencing a contraction in life expectancy, making it crucial for us to be concerned about American education policy.

The magnitude of the influence of educational attainment on health and health disparities is enormous. Low levels of educational attainment directly contribute to low health and science literacy, which in turn become high barriers to effective cancer prevention and health promotion. Early intervention is crucial to prevent cancer in the high-risk ages 45–64 years to effectively address cancer health disparities and intercept events that initiate and promote cancer, which happen earlier in populations at risk as outlined in [Figure 1](#). Health professionals must begin to formally and consistently partner with and advocate for educational partners. Advocating for improvement to the American educational system with special focus on schools in poor and minority

communities may be one of the most effective cancer prevention strategies to overcome the barriers that impede swift reduction in cancer health disparities.

Conclusion

There are numerous gaps in our knowledge about the specific molecular mechanisms through which social determinants of health are transduced into differential cancer outcomes. Some of the relevant factors lie outside of the direct scope of healthcare researchers and providers but within the realm of political will and governmental action to address the roots of poverty in our society. However, within the realm of the health professional, it is possible to design, develop, and implement novel approaches that address cancer health disparities at the prevention level that override the traditional medical specialty-specific “silo” approach, incorporate technology, enhance health literacy and patient health education, and negotiate barriers associated with poverty, language, and culture.

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