



## ADDRESSING RURAL CANCER HEALTH DISPARITIES

Geographic Health Equity Alliance Rural Cancer Disparities Publication

### CALL TO ACTION





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Geographic Health Equity Alliance Rural Cancer Disparities Publication

Dear Friends and Colleagues:

On behalf of the Geographic Health Equity Alliance (GHEA) and its partners at Wake Forest Baptist School of Medicine, it is my pleasure to present Call to Action: Addressing Rural Cancer Health Disparities.

A project of Community Anti-Drug Coalitions of America (CADCA) funded by the Centers for Disease Control and Prevention (CDC), GHEA serves as a national network of coalitions, state programs, national organizations, researchers, community-based agencies, place-based organizations and other pertinent stakeholders, dedicated to addressing geographic health disparities related to tobacco use, cancer prevention and survivorship. GHEA defines geographic health disparities as the differences in health behaviors and health outcomes related to where people live.

Without a doubt, rural Americans are a population group that experiences significant health disparities. Primary factors driving rural health disparities are access to healthcare, socioeconomic status, unhealthy behaviors, and chronic conditions. In this publication, GHEA and its partners shine a spotlight on ways leaders can address rural disparities along the cancer continuum. Call to Action offers GHEA's geographic health equity model, which can be applied to better identify contributors to rural disparities in tobacco and cancer and implement the most appropriate place-based promising practices.

GHEA engages in partnerships, objectives, and activities that cumulatively will increase the quality of life for all Americans, specifically those most affected by the immense burden of commercial tobacco use, inadequate cancer prevention strategies and a dearth of cancer survivorship services. Reducing and ultimately eliminating geographic health disparities requires the hard work and collaboration of many people. Special thanks to our CDC project officers within the Office of Smoking and Health and the Division of Cancer Prevention and Control (DCPC) for their guidance during the development of the project: Randi Frank, Anna Schechter and Ena Wanliss. In particular, Ena Wanliss and her colleagues at DCPC graciously provided review during critical stages of this publication development.

GHEA is supported by our rural cancer experts and evaluators at the Wake Forest Baptist School of Medicine, led by Kathryn E. Weaver, PhD, and Carla Strom, MLA. Our evaluation team is led by Mark Wolfson, PhD.

GHEA wishes to thank the following people for their direct involvement in the development of this publication. Special acknowledgment goes to Mary Elizabeth Elliott, a daughter of the rural Midwest, who helped to form GHEA as its first Principal Investigator and Project Director. Many thanks to Victoria Carlborg and Relja Ugrinic on the GHEA team for their contributions. Finally, special recognition and deepest appreciation to the entire GHEA Advisory Council for their thoughtful review of the publication and support of GHEA's mission.

We hope this publication provides some new ideas, sparks conversations among your colleagues, and ultimately, moves the reader to take action. Join the GHEA network. Engage with GHEA at [healthdisparities.org](http://healthdisparities.org) or on social media accounts with the handle GeoHealthEquity and by using the #WhereMatters hashtag.

Sincerely,



Keith A. Vensey, MBA, MPH, Director of GHEA

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Additional Notes

*Italicized* words are defined in the glossary.

When referring to racial and ethnic groups, the terminology of the original studies has been used to be authentic to the researcher's definition. The terms black, African-American, white, Caucasian, Hispanic and Latino will be used accordingly.

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## Why Are Rural Cancer Health Disparities Of Concern?

**W**hat are some factors that may contribute to rural cancer health disparities?

Rural residents are an under-recognized population at risk for poor cancer outcomes, including higher cancer incidence<sup>1</sup> and mortality<sup>2</sup>, particularly for lung, colorectal, prostate, breast, and cervical cancers. Cancer disparities may stem from underlying differences in population characteristics, access to health care, and cancer risk factors. Rural-residing persons, in general, tend to be older, poorer, less educated, less likely to have health insurance, and more likely to encounter transportation challenges<sup>3-5</sup>. Rural residents may face challenges in accessing medical care and necessary support services due to extended and sometimes difficult travel and a limited number of health care facilities, especially those with full cancer services, including National Cancer Institute-designated Comprehensive Cancer Centers<sup>5,6</sup>. Rural-urban differences in risk factors for cancer, such as physical inactivity and smoking, also contribute to geographic disparities in cancer. The cancer control continuum (*Figure 1*) framework can be used to organize cancer prevention and control efforts. A summary of how rural residence may impact each stage of the cancer continuum from prevention to end of life care is provided below.

### Rural Disparities in Cancer Prevention.

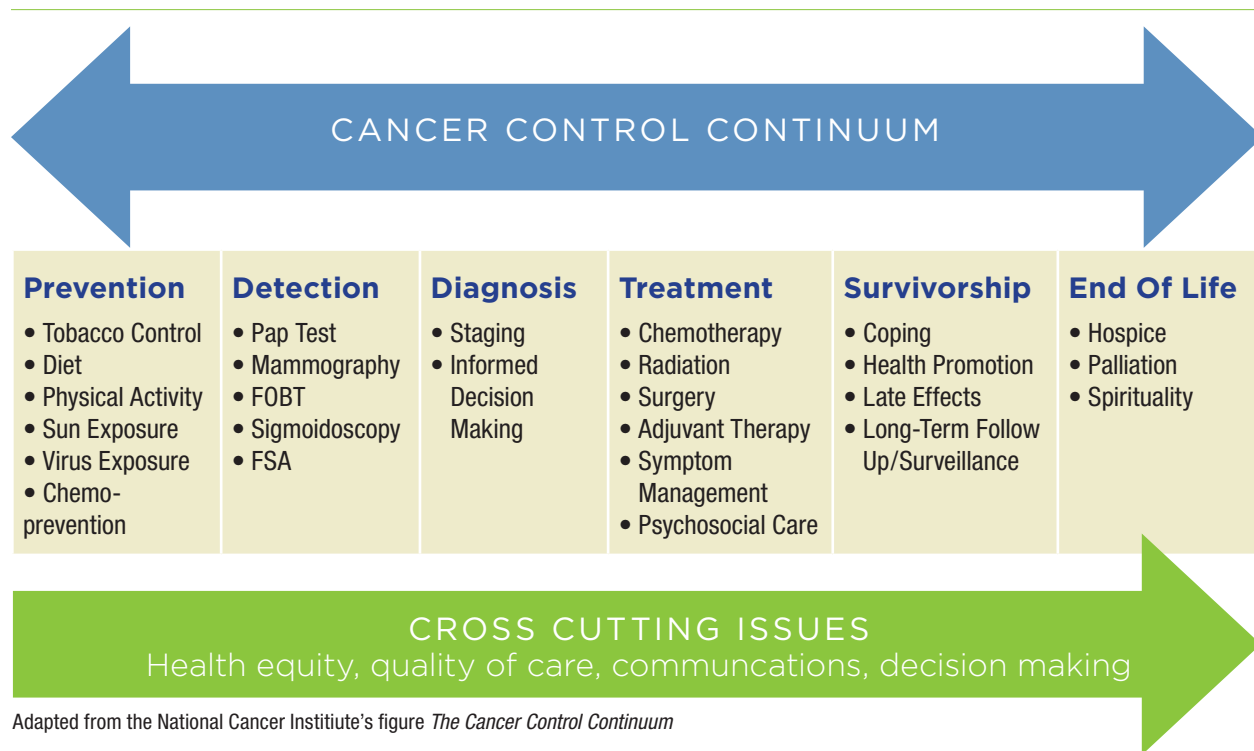
A number of important behaviors related to cancer risk are more present in rural areas. These include tobacco use, physical inactivity, obesity, and sun exposure. Adults living in rural areas are significantly more likely to smoke cigarettes, use smokeless tobacco, and report exposure to second-hand smoke. Physical inactivity may be higher due to lack of sidewalks, distance to

### DEFINING “RURAL”

Researchers and policy officials employ many definitions to distinguish rural from urban or metropolitan areas. This reflects that rural and urban are multidimensional concepts, commonly employing criteria such as population size and density, commuting patterns, and adjacency to metropolitan areas. Definitions also vary on the geographical area unit (county-level designation vs census tracts).

One common example of a county-level designation is the 2013 USDA Rural-Urban Continuum (RUC). All U.S. counties are assigned an RUC code from 1-9 (higher indicates greater rurality) based on size of the largest population center and adjacency to a “metro” county (>50,000 residents). Rural counties are commonly defined as codes 4-9. <http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx>

The Rural-Urban Commuting Area (RUCA) Codes are a census tract-level classification system that combines population and commuting information to characterize rural and urban status. The 33 different RUCA codes are often grouped as urban, large rural, small rural, and isolated. A zip code-based data set is also available. <http://depts.washington.edu/uwruca/>



Adapted from the National Cancer Institute's figure *The Cancer Control Continuum*

**Figure 1. The Cancer Control Continuum**

The cancer control continuum is a framework to organize cancer prevention and control efforts from prevention to survivorship. Disparities associated with rural residence commonly occur in prevention, detection, diagnosis, treatment, survivorship, and end of life.

recreation areas, and limited public transportation that would encourage physical activity<sup>7</sup>. Obesity is higher in rural areas; differences in the built environment, particularly the availability of sidewalks and facilities that promote walking or other forms of exercise, may contribute to this disparity<sup>8</sup>. The lack of available healthy foods may also contribute to obesity disparities. Rural communities may be characterized by poor access to supermarkets and healthful food products, sometimes referred to as a food desert<sup>9</sup>. Occupational differences for rural versus urban residents may be responsible for increased exposure to the sun, and some data suggest a lower likelihood of sunscreen use among rural residents<sup>10</sup>. Lastly, cervical cancer mortality and incidence rates are consistently higher among rural rather than urban-dwelling women and are higher in the South than elsewhere in the United States. This may be partly attributed to high

Human Papillomavirus (HPV) infection rates among some populations of rural women<sup>11</sup>. In addition, many women living in rural areas experience inadequate Pap smear<sup>12</sup> and cervical cancer treatment availability<sup>13</sup>. The provision of HPV vaccination to reduce the risk of cervical cancers may require targeted efforts in rural communities due to poor knowledge about HPV and cervical cancer<sup>14</sup>, less vaccine encouragement from pediatricians<sup>15</sup>, challenges with patient-provider communication<sup>15</sup>, and reluctance to discuss sexual health<sup>13,17</sup>.

### Rural Disparities in Screening/ Early Detection.

Rural-urban differences in access to and utilization of cancer screening services are likely large contributors to disparities observed in cancer incidence and mortality. Rural women are less likely to have ever received a mammogram or to be current for mammography screening<sup>18</sup>. Rural

older adults are also less likely to be screened for colorectal cancer<sup>19</sup>. Among women living in areas with low access to primary care, rural women are less likely to have been screened for cervical cancer compared to urban women<sup>20</sup>. Although there are no data available for rural-urban disparities in the recently introduced lung cancer screening test, availability may be lower in rural areas, which are generally more medically underserved.

### Rural Disparities in Diagnosis.

For some types of cancer, patients living in rural areas may be more likely to be diagnosed with cancer at a more advanced and less treatable stage. A recent meta-analysis suggests that rural women are 19% more likely to be diagnosed with late-stage breast cancer compared to urban breast cancer patients<sup>21</sup>. In contrast, several studies have not observed rural-urban differences in stage at diagnosis for colorectal and lung cancers<sup>22,23</sup>. Rural women have a slightly higher, but not statistically significant, likelihood of being diagnosed with a more advanced stage of cervical cancer. However, the 5-year survival rate for black rural women diagnosed with cervical cancer is significantly lower than black and white women living in metropolitan areas<sup>24</sup>.

### Rural Disparities in Treatment.

Some studies suggest that rural cancer patients may receive care that is less consistent with clinical practice guidelines for breast and colorectal cancers, possibly contributing to poorer survival<sup>25,26</sup>. Similarly, rates of receipt of definitive treatment for early-stage prostate cancer were lower among men in rural areas compared to urban areas<sup>27</sup>. Rural patients with cancer may also opt for cancer treatment that does not require repeated visits because of travel barriers, potentially resulting in greater side effects and/or lower efficacy<sup>28-30</sup>. For example, a higher proportion of women with early stage breast cancer may

## STRENGTH AND RESILIENCE IN RURAL COMMUNITIES

While rural communities may face many challenges to promoting and maintaining the health of their residents, they also have features that promote resiliency. Rural communities may have strong multigenerational families and linked community networks that serve as informal support services<sup>44</sup>. Other strengths may include shared values of self-reliance, the importance of family ties, and a desire to help others in their community. Churches and schools may also serve as strong social institutions in rural communities. Finally, rural communities may have a strong sense of community pride and identification with the land.

The Institute of Medicine Quality through Collaboration report<sup>45</sup> recognized that rural communities and health care providers may excel at collaboration, networking, and community learning efforts. The scarcity of resources in rural areas and the reduced complexity of rural health care systems may further promote collaboration.

receive a mastectomy (complete breast removal) versus breast-conserving surgery plus radiation therapy<sup>31</sup>. During and after cancer treatment, rural cancer patients may also find it more difficult to access supportive care services, such as psychological counseling, nutrition, or physical therapy<sup>32,33</sup>.



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### **Rural Disparities in Survivorship**

Rural cancer survivors may have worse long-term outcomes than their urban counterparts, including poorer health after a cancer diagnosis (worse health-related quality of life, more non-cancer comorbidities, higher rates of health-related unemployment, and increased psychological distress)(34). Self-management can also be challenging for rural survivors because they tend to be poorer and less educated than their urban counterparts(34). These factors are related to cancer knowledge(35,36) and difficulty understanding cancer-related information(37). Rural cancer survivors are also more likely to report health compromising behaviors after cancer such as cigarette smoking and physical inactivity(38).

### **Rural Disparities in End-of-Life Care Among Cancer Patients**

Gaps in end-of-life care have been identified among rural cancer patients(39). In the United States, hospice services are unavailable in 24% of rural communities versus 1.3% of urban communities(39). Rural Medicare beneficiaries, in general, are less likely to use hospice and enroll in hospice later, relative to non-rural beneficiaries(40). Recent studies of colorectal and lung cancer patients have found that Medicare beneficiaries in rural areas are less likely to utilize hospice services, have fewer intensive care unit days, and are more likely to have ER visits in the last 90 days of life, than those in urban areas(41–43). Medicare spending in the last year of life for elderly cancer patients was 4-10% less for rural patients with breast, prostate, colorectal, and lung cancers, relative to their urban counterparts(41)

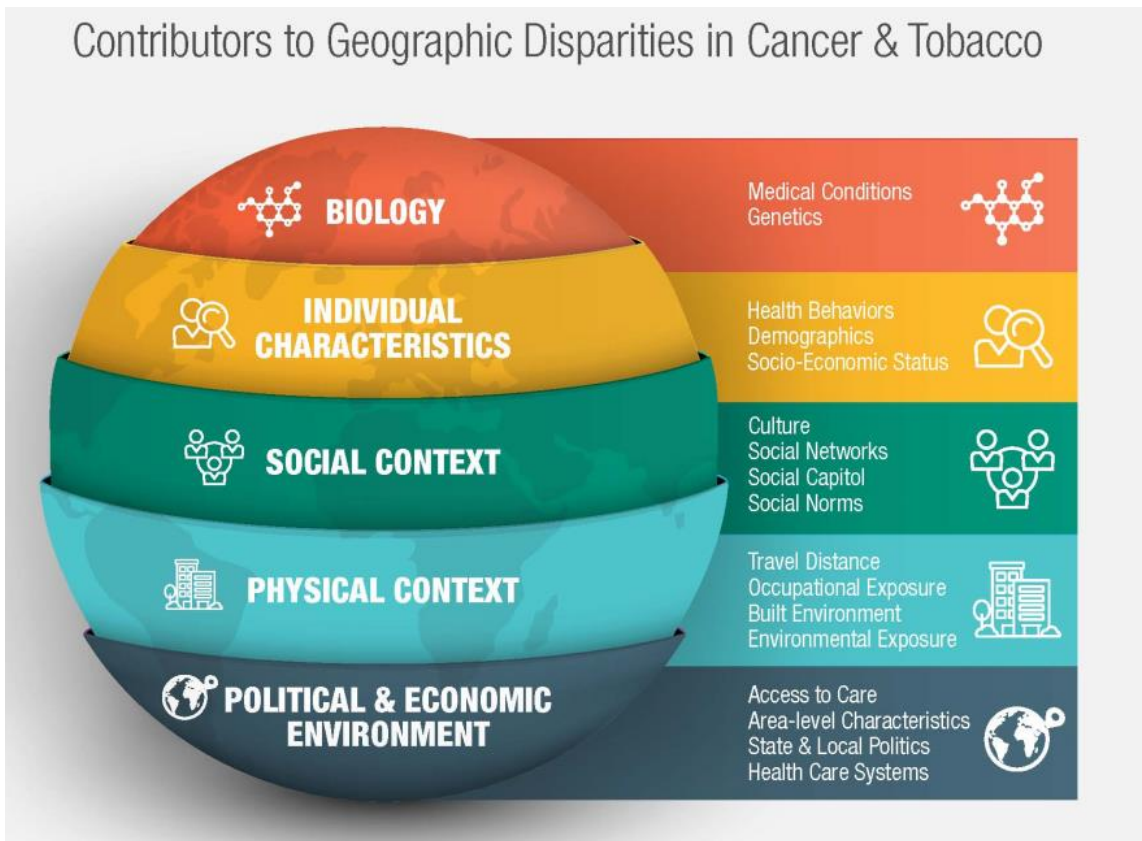
## Diagnosing the Problem

### GHEA Multi-level Model of Geographic Health Disparities (Figure 2)

Geographic disparities in cancer are the result of a complex set of underlying factors that directly and indirectly influence health. In order to develop appropriate interventions to reduce geographic health disparities, the Geographic Health Equity Alliance (GHEA) developed a model to describe and categorize multi-level factors influencing health behaviors and outcomes. This framework was adapted from the general socio-ecological framework that considers multiple levels of influence and specifically the model developed by Warnecke and colleagues to guide health disparity research<sup>44</sup>.

Communities can use this model to both understand how health in their community is being influenced and to determine which factors may be the best targets for intervention. GHEA identified five inter-connected “levels” of influence on geographic disparities in cancer. It is important to note that factors at one level are often closely linked with other levels. The next section describes factors at each level that may contribute to health outcomes. In Chapter 4, specific examples are provided of how each level may apply in rural communities and contribute to rural cancer health disparities.

**Biology.** The innermost level examines the influence of biology on cancer outcomes and includes medical conditions and genetics. Medical conditions include illness or problems



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that interfere with an individual's well-being and need to be treated or managed. Some medical conditions can increase an individual's risk of cancer, such as chronic inflammatory bowel disease increasing the risk of colorectal cancer<sup>45</sup>. Genetics refers to the study of genes and heredity—the passing of genetic information and traits from parent to offspring. Cancer is caused by changes in genes that control the way cells grow and divide. Some of these genetic changes are inherited from parents, but others occur during one's lifetime. Genetic mutations inherited from parents play a major role in a small number of cancers (5-10%), which are sometimes called hereditary cancer syndromes. For example, gene mutations in the BRCA1 and BRCA2 genes increase an individual's risk of breast and ovarian cancers<sup>46</sup>.

**Individual Characteristics.** The second level focuses on individual characteristics that influence cancer risk. These include individual health behaviors, demographics, and socioeconomic status<sup>45</sup>. Health behaviors are actions taken by individuals that affect their health status. A person's chances of developing cancer can be increased by certain health behaviors, such as cigarette smoking. Tobacco use can lead to cancers of the bladder, esophagus, kidney, lung, oral cavity, pancreas, stomach, and leukemia<sup>47</sup>. Demographics include characteristics such as age and gender. The number one risk factor for cancer is age, with the risk of developing cancer increasing with age. Socio-economic status is the measure of a person's income, education, and occupation; it indicates social standing in relation to others and impacts well-being. Higher socioeconomic status is associated with an increased risk of breast cancer due to differences in reproductive history and use of hormonal medications<sup>48-49</sup>. Lower socioeconomic status is associated with worse breast cancer outcomes<sup>50</sup>. Studies

have also shown that cancer patients who do not have insurance die from their disease at higher rates than those with insurance<sup>51-54</sup>.

**Social Context.** The third level examines features of the social context, including social networks, cultural beliefs, and shared norms. Social networks are relationships and contacts with which a person has social interactions, such as friends, family, and colleagues. Cancer survivors with larger social networks and greater social support generally report having a better quality of life than cancer survivors with less social support<sup>55</sup>. Culture is the shared knowledge, beliefs, attitudes, and values of a particular society or group of people. Culture can influence group beliefs regarding cancer-related myths. For example, fatalism is sometimes seen in

#### DEFINITION OF COMMUNITY:

Community is commonly defined as a **unified body of individuals**. "Community" is a commonly used term in cancer and tobacco control planning and should be defined by the group leading the efforts. Community can be specific to an area (such as neighborhood, city or county) or can apply to a group of people with similar interests, religion, race, etc.

Hispanic and African American cultures and can lead to the belief that cancer is a death sentence<sup>56,57</sup>. This can result in individuals not following recommended screening guidelines or delaying treatment when they are experiencing symptoms. Social capital is the collective value of social interactions between individuals and groups that facilitates positive benefits. Social capital may influence adherence to recommended screening guidelines and can be an important aspect of program development and policy creation. Social norms are rules, cues,



or standards of behavior shared by a society or group of people. Changing social norms around risky behaviors can influence cancer incidence. For example, changing social norms about the desirability of indoor or outdoor tanning could reduce the rising incidence of skin cancer.

**Physical Context.** The fourth level of the model focuses on the physical context, including the natural, occupational, and built environments. The natural environment includes travel distance, or the distance needed to travel to access health care facilities and services. Patients who have to travel longer distances to receive cancer-related care (prevention, screening, diagnosis, and treatment) are more likely to be diagnosed with a more advanced stage of cancer<sup>58</sup>. Occupational/environmental exposures

occur during the performance of job duties and can place workers at risk for adverse health events. Exposure to carcinogens in the workplace and the subsequent development of cancer has been well documented; between 3-6% of cancer cases worldwide are caused by occupational exposure<sup>59</sup>. Examples of occupational exposures linked to cancer include certain chemicals, dust, radiation, and industrial processes (see lists provided by CDC at <http://www.cdc.gov/niosh/topics/cancer/npotocca.html> and the American Cancer Society)<sup>60</sup>. Environmental exposures refer to potentially hazardous substances or other features, such as advertising. Very few cases of cancer are believed to be caused by environmental exposure to chemicals outside of the workplace; however, secondhand smoke

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is classified by the Environmental Protection Agency (EPA) as a carcinogen. It is estimated that 3,000 lung cancer deaths in non-smokers each year are the result of secondhand smoke<sup>61</sup>. The built environment consists of the surroundings in which people live and operate that are created by humans. Features of the built environment in communities can contribute to physical inactivity and obesity. These features include a lack of safe, affordable places to exercise, such as neighborhood sidewalks, playgrounds, and walking trails, an absence of larger well-stocked grocery stores, and a heavy concentration of fast food restaurants. This creates an environment that is less conducive to exercise, healthy living and ultimately cancer prevention.

### **Political and Economic**

**Environment.** Finally, at the outermost level, the political and economic environment includes key features of communities such as policies and laws, availability of health care services, and characteristics of people who live in the community (e.g., income, housing, and education). This level also includes geographical features such as population density and rurality, as well as the number and distribution of healthcare providers and facilities. Access to care is a particularly important factor influencing geographic health disparities. Broadly speaking, access to care is a person's ability to utilize health care systems to obtain recommended care. Access can be influenced by many factors, including geographic proximity to providers, but a lack of insurance has been highlighted as one of the most significant barriers to cancer care.

State and federal policies can have a profound impact on rates of insurance coverage related to policies regarding Medicaid funding, eligibility, and expansion<sup>62</sup>. Other state policies impact cancer care access through laws regarding coverage for screening tests or treatment. Early detection of cancer has the potential to save lives and underscores the importance of screening (for example, colonoscopy for colorectal cancer detection). Many states have passed laws to require insurance coverage for a range of cancer screening tests that can help prevent or detect cancer in earlier stages when it is less expensive to treat and treatments are more effective; others have not<sup>63</sup>. Laws requiring insurers to provide coverage for oral chemotherapeutic drugs in the same manner as intravenous chemotherapy treatments (also known as oral chemotherapy parity laws) also vary by state and may profoundly impact the cost of cancer treatment and therefore patients' ability to access treatment<sup>41</sup>. Other key features of communities include factors such as residential segregation, rurality, and neighborhood poverty, sometimes called area-level demographics<sup>2</sup>. Robust health care systems depend on an adequate supply of health care services and professionals. A pivotal report issued in 2014 by the American Society of Clinical Oncology, *The State of Cancer Care in America 2014*, outlines threats to patient access from growing demand, physician shortages, and struggling small physician practices. The report noted that only 3% of oncologists are located in rural areas<sup>64</sup>.

## Developing Community Solutions to Address Rural Cancer Health Disparities

### Steps for Identifying and Addressing Rural Cancer Health Disparities

There is an urgent need for state health officials, health care providers, researchers, community organizations, and coalitions to work together to address rural cancer disparities. Frameworks are available to guide these efforts with the goal of maximizing the positive impact of programs. Organizations involved in cancer and tobacco control planning, such as the Substance Abuse and Mental Health Services Administration (SAMHSA) and the National Association of County and City Health Officials (NACCHO), provide resources to support community efforts to address health problems. Common to all of these frameworks is the inclusion of capacity, assessment, and planning.

For this reason, this guide focuses on the following 3 Steps:

1. Engage the community—**Capacity**
2. Identify the problem—**Assessment**
3. Decide what to do—**Planning**

The ordering of these steps may vary, as the timing of capacity and assessment may differ depending on the goals of the community.

#### *Step 1: Engage the community—Capacity*

Form a stakeholder workgroup or engage an existing coalition that includes stakeholders, service providers, and potential group members. The following characteristics can help guide recruitment of group members:

- a. Knowledge and skills related to the problem
- b. Representation from service providers
- c. Residents of the selected community
- d. Representation from diverse sectors of the community (*see Box 1*)

### POTENTIAL COMMUNITY STAKEHOLDERS

- Cancer Survivors
- Non-profit Organizations
- Youth
- Religious / Fraternal Orgs.
- Business
- Civic / Volunteer Groups
- Media
- Healthcare Professionals
- Schools
- Law Enforcement
- Government
- Public Health
- Community Residents

#### Box 1

Once a group of individuals dedicated to developing and executing appropriate community solutions has been formed, a commitment should be made to provide ongoing training and support throughout the entire process.

#### *Step 2: Identify the problem—Assessment*

The strategic framework in Figure 3 describes the assessment process as specifically applied to geographic disparities, including rural populations. Needs assessments conducted in the community should:

1. Identify geographic disparities in outcomes
2. Examine the risk / contributing factors for those outcomes
3. Determine which conditions contribute to the geographic disparities
4. Prioritize the factors/conditions that contribute to the geographic disparities

Information on rural-urban cancer disparities can be obtained through multiple sources. Qualitative

data can include focus groups, key informant interviews, town hall meetings, observation, and environmental scans. Archival quantitative data sources can come from education, law enforcement, health care, commerce, and the census, among others. Examples of data sources that may be helpful to addressing rural disparities in cancer include: Community Commons; state cancer plans; Surveillance, Epidemiology, and End Results (SEER); Behavioral Risk Factor Surveillance System (BRFSS); and the Centers for Disease Control National Program of Cancer Registries (NPCR). Additional information can be found in Appendix A: Resources and Additional Information.

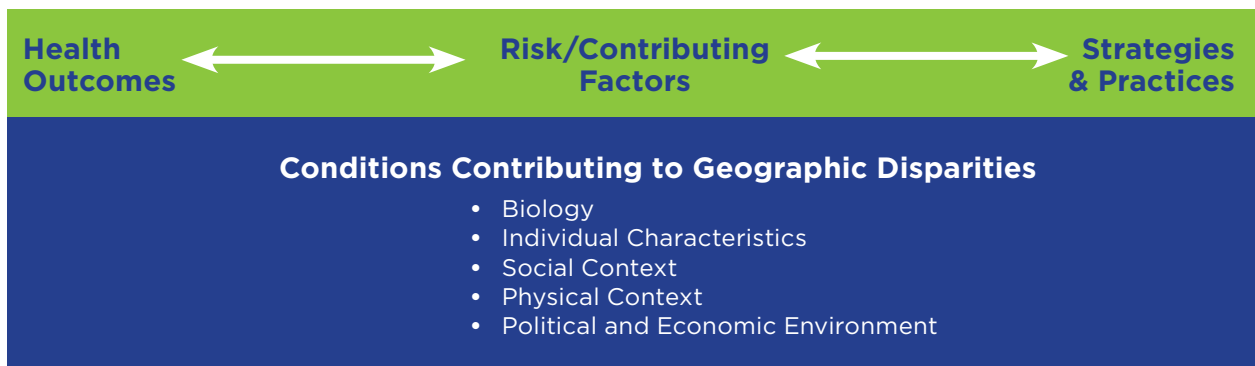
*Step 3: Decide What to Do- Planning*

Plan comprehensive, evidence-based strategies to address the geographic disparities identified during the assessment process. Community Anti-Drug Coalitions of America (CADCA) has identified seven change strategies that, when implemented together, increase the likelihood of effectively reducing problems at the community level. CADCA's Seven Strategies for Community Change are shown in Box 2 and include: 1) providing information, 2) enhancing skills, 3) providing support, 4) enhancing access/reducing barriers, 5) changing consequences (incentives and disincentives),

6) physical design, and 7) modifying/changing policy. In the next section, specific examples are provided to illustrate how to use each of these strategies to address rural cancer disparities.

The cancer control continuum discussed in Chapter 1 can serve as a framework for aligning the identified disparities with the appropriate intervention. When selecting an intervention, seek evidence-based best practices, and consider that the quality of evidence for interventions (*Figure 4*) can vary significantly depending on the source. The highest level of evidence available should be used. Often, a best practice intervention is not available for the particular outcomes the group is targeting. The next best option is to adapt current evidence-based interventions, taking into consideration the original setting, environment, and method of delivery. For example, an intervention for breast cancer screening in rural populations could be adapted to cervical cancer screening in rural populations. The National Cancer Institute has *Guidelines for Choosing and Adapting Programs* as part of its Research-Tested Intervention Programs (RTIPs) that can help inform selection of an intervention: [http://rtips.cancer.gov/rtips/reference/adaptation\\_guidelines.pdf](http://rtips.cancer.gov/rtips/reference/adaptation_guidelines.pdf). Additional information on RTIPs can be found in the Appendix A: Resources and Additional Information.

Figure 3. Identifying Contributing Factors to Geographic Disparities



## CADCA'S SEVEN STRATEGIES FOR COMMUNITY CHANGE

- 1. Providing Information** – Educational presentations, workshops or seminars, or other presentations of data (e.g., public announcements, brochures, billboards, community meetings, forums, web-based communication).
- 2. Enhancing Skills** – Workshops, seminars or other activities designed to increase the skills of participants, members and staff needed to achieve population-level outcomes (e.g., training, technical assistance, distance learning, strategic planning retreats, curricula development).
- 3. Providing Support** – Creating opportunities to support people to participate in activities that reduce risk or enhance protection (e.g., providing alternative activities, mentoring, referrals, support groups or clubs).
- 4. Enhancing Access/Reducing Barriers** – Improving systems and processes to increase the ease, ability and opportunity to utilize those systems and services (e.g., assuring healthcare, childcare, transportation, housing, justice, education, safety, special needs, cultural and language sensitivity).
- 5. Changing Consequences (Incentives /Disincentives)** – Increasing or decreasing the probability of a specific behavior that reduces risk or enhances protection by altering the consequences for performing that behavior (e.g., increasing public recognition for deserved behavior, individual and business rewards, taxes, citations, fines, revocations/loss of privileges).
- 6. Physical Design** – Changing the physical design or structure of the environment to reduce risk or enhance protection (e.g., parks, landscapes, signage, lighting, outlet density).
- 7. Modifying/Changing Policies** – Formal change in written procedures, by-laws, proclamations, rules or laws with written documentation and/or voting procedures (e.g., workplace initiatives, law enforcement procedures and practices, public policy actions, systems change within government, communities and organizations).



## General Strategies for Community Engagement around Health Disparities

### Community Health Workers.

Community Health Workers (CHWs) are an integral part of the community health care system, “build[ing] individual and community capacity by increasing health knowledge and self-sufficiency through a range of activities such as outreach, community education, informal counseling, social support and advocacy”<sup>65</sup>. As a result, many rural health programs are turning to CHWs for their unique ability to connect patients and the health care services available to them. CHWs are uniquely qualified as connectors because they live in the communities in which they work, understand what is meaningful to those communities, communicate in the language of the people, and recognize and incorporate cultural buffers (e.g., cultural identity, spiritual coping, traditional health practices) to help patients and promote health outcomes<sup>65</sup>.

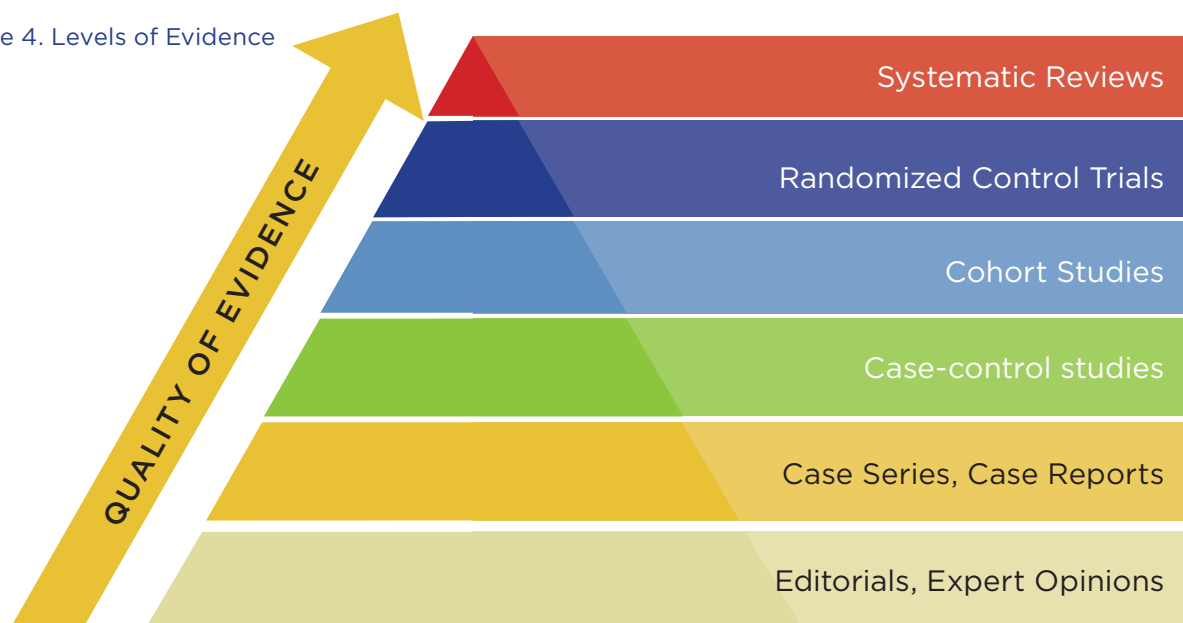
### Partnership with Faith-Based Organizations.

Faith-based organizations are commonly trusted community entities, care for the spiritual needs of community members, and may provide safety net services. Partnerships that seek to enlist faith-based organizations as partners for health promotion have the potential to reduce cancer health disparities among underserved communities<sup>67,68</sup>. Evidenced-based cancer control interventions that include faith communities are available to address fruit and vegetable consumption; physical activity; and breast, cervical, and colorectal cancer screening<sup>69</sup>. Faith-based organizations have also been enlisted to support the CDC Tips From Former Smokers campaign<sup>70</sup>.

### Mass-media Campaigns and Community Education.

Media campaigns are a commonly used public health strategy to influence health behaviors in various populations. Such campaigns, commonly delivered via television, radio, billboards, posters, and print media, are appealing because of their ability

Figure 4. Levels of Evidence



## CANCER SCREENING CASE STUDY: PROBLEM IDENTIFICATION

Scenario: A local Susan G. Komen Foundation office adds 7 rural mountainous counties to their affiliate service area.

**STEP 1:** A regional advisory group is formed to advise the affiliate. The advisory group is comprised of local business leaders, breast cancer navigators, cancer survivors, health departments and health care providers, among others.

**STEP 2:** Community profile conducted/reviewed and shows:

- 1. Outcomes** - Increased breast cancer mortality.
- 2. Contributing factors** - Only three counties have mammography services, lack of insurance, lower socioeconomic status.
- 3. Conditions** - Rural, mountainous area approximately 2 hours from the closest academic medical center.
- 4. Prioritize**- Address access to mammography services.

**STEP 3:** The affiliate will work with the advisory group and community to address the significant barriers to screening mammography. The CADCA strategies they will utilize include:

- 1. Providing information** - create a handout with local options for mammography and distribute to the community through numerous venues, including health fairs, health departments, and area primary health care providers.
- 2. Enhancing access/reducing barriers** - Partner with county public transportation non-profits to apply for grants to assist in developing scheduled routes to mammography facilities.
- 3. Changing consequences** - Advocate for tax incentives for mammography facilities to have extended hours in the evening and on weekends.

to disseminate a focused message to a large audience at a relatively low cost. There is strong evidence of their effectiveness in changing health behaviors to address tobacco use<sup>71</sup>. Additionally, moderate evidence supports mass-media campaigns promoting physical activity among targeted audience(s), improving nutrition, and increasing breast cancer screening. In contrast, there is insufficient evidence to support mass-media campaigns covering skin cancer prevention<sup>71</sup>. Such campaigns are often used in conjunction with broader community education efforts (e.g., health

fairs, public campaigns). Episodic, or on-and-off campaigns, may be most effective in promoting cancer control behaviors (e.g., screening, vaccination) rather than habitual and continual behaviors (e.g., sun exposure, dietary habits). Consideration should also be given to the target audience when designing mass-media campaigns (e.g., youth, middle age adults, parents of teenage children). Mass media campaigns should also be accompanied by structural and policy change efforts to ensure access to promoted services (e.g., smoking cessation, cancer screening)<sup>71</sup>.

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### Navigation to Reduce Barriers.

Patient navigation has emerged as a strategy to reduce cancer health disparities by helping patients overcome barriers that interfere with screening, timely diagnosis, and treatment for cancer<sup>72</sup>. Patient navigators are generally nurses, social workers, or specially trained lay/community health workers who help patients

navigate through the complex health care delivery system and address instrumental (e.g., transportation, financial assistance), communication, and educational barriers. Patient navigators have been used across the cancer control continuum, with the strongest evidence for a benefit in the context of follow-up of abnormal cancer screening tests<sup>73,74</sup>.



## Intervention Guide for Geographic Disparities in Cancer & Tobacco

### GHEA's Geographic Health Disparities Model and CADCA's Seven Strategies for Community Change

The Intervention Guide for Geographic Disparities in Cancer & Tobacco (Figure 5) links the GHEA Model of Geographic Health Disparities and CADCA's Seven Strategies for Community Change. This framework can assist in determining possible interventions based on indicators identified during problem assessment. Levels of intervention (e.g., individual, social context, political and economic) are identified according to the GHEA Model and linked with possible intervention strategies (both individual and community-level). Examples of promising intervention strategies to address rural cancer health disparities are described.

#### BIOLOGY

**Recommended strategies:** Provide information, Enhance access.

**Example:** Breast cancer genetic risk factors.

**Interventions:** Increase awareness and/or testing for breast cancer genetic risk factors, educational campaigns about cancer genetics, and genetic testing.

Within the biological context, several factors contribute to rural cancer disparities through bodily processes such as obesity, depression, stress, alcoholism, diabetes, and genetic mechanisms. Two of CADCA's 7 Strategies for Community Change are recommended to address the biological context: providing information, and enhancing access. These factors are illustrated using the example of breast cancer genetic risk factors.

Breast cancer has a genetic component with 5-10% of all breast cancer cases resulting from inherited mutations of the BRCA1 and BRCA2 genes<sup>75</sup>. Sixty percent of women who have inherited a BRCA1 or BRCA2 mutation

will develop breast cancer compared to 12% of women in the general population<sup>75</sup>. Tests for these genetic mutations are now available and represent a means to reduce breast cancer morbidity and mortality. Genetic testing is available for women identified as high-risk via family history and genetic counseling; however, recent survey data reveal at least 15 U.S. states report fewer than five genetic counselors in the entire state<sup>76</sup>. Therefore, for most people in rural areas, accessing genetic counseling means traveling to an urban center. Telemedicine could be one approach to overcoming travel and access barriers to genetic testing. With telemedicine, genetic services, education, and counseling are provided remotely by telephone, videoconferencing, or using internet-based services such as Skype. Studies have suggested that such approaches are successful, culturally acceptable, and welcome<sup>77</sup>.

A recent study demonstrated that rural Appalachian women's attitudes toward genetic testing and perceived risks and benefits were mostly in line with other ethnic groups<sup>78</sup>. Younger age, family history of cancer, and greater worry predicted greater intention to seek genetic testing. However, Appalachian women were more concerned about the cost of testing and effects on their families. Information and services need to be provided in a way that incorporates the unique cultural values and beliefs of rural populations and addresses concerns such as privacy in smaller communities. This may be particularly important for communities less trusting of genetics in medicine, such as the African-American population who may be less likely to use genetic tests due to fears of discrimination<sup>79</sup>. Recognizing such considerations are vital to developing culturally sensitive counseling and genetic testing processes that increase uptake in underserved communities. Comprehensive health insurance coverage is also critical to improved access to genetic services.

Figure 5. Intervention Guide for Geographic Disparities in Cancer & Tobacco

		Indicators	CADCA's 7 Strategies	Intervention Examples
<b>COMMUNITY LEVEL</b>	Political & Economic Environment	<ul style="list-style-type: none"> <li>• Community Profile - Neighborhood poverty, residential segregation, rurality education, poverty</li> <li>• Indoor smoking bans</li> <li>• Insurance, Medicaid expansion, cancer screening programs</li> </ul>	7. Modify/change policy	<ul style="list-style-type: none"> <li>• Federal/state/local policy</li> <li>• Health systems interventions</li> <li>• Community organizing</li> <li>• Community clinical linkages</li> <li>• Faith-health partnerships</li> <li>• Public service campaigns</li> </ul>
	Physical Context	<ul style="list-style-type: none"> <li>• Incidence rates/cancer "hot spots", concentration of employment in high risk professions, secondhand smoke exposure</li> <li>• Availability of recreational facilities, fast food, alcohol and tobacco retail outlets, food deserts</li> <li>• Access to cessation services - quit line benefits</li> <li>• Provider/specialist availability (AHRQ)</li> </ul>	4. Enhance access 6. Physical design 7. Modify/change policy	
	Social Context	<ul style="list-style-type: none"> <li>• Religious participation, perceived support/constraint</li> <li>• Community attitudes regarding tobacco and cancer</li> <li>• Voting rates, community trust, voluntary associations.</li> </ul>	1. Provide information 2. Enhance skills 3. Provide support 4. Enhance access 5. Change consequences	
<b>INDIVIDUAL LEVEL</b>	Individual Characteristics	<ul style="list-style-type: none"> <li>• Gender, age, race/ethnicity</li> <li>• Smoking, alcohol, diet, physical activity</li> <li>• Education, employment, income, health insurance</li> <li>• Cancer screening</li> </ul>	1. Provide information 2. Enhance skills 3. Provide support 4. Enhance access	<ul style="list-style-type: none"> <li>• Wellness programs</li> <li>• Health promotion &amp; education</li> <li>• Risk awareness</li> <li>• Cancer screening</li> <li>• Self management</li> </ul>
	Biology	<ul style="list-style-type: none"> <li>• Obesity depression, stress, alcoholism, diabetes</li> <li>• Genetic mechanisms, biological processes</li> </ul>	1. Provide information 2. Enhance access	<ul style="list-style-type: none"> <li>• Chemoprevention</li> <li>• Cessation</li> <li>• Medications</li> <li>• Medical treatment</li> </ul>

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BRCA genetic testing costs approximately \$3,000<sup>78</sup>. Although many patients have insurance coverage for testing, some cannot afford the out-of-pocket expense. More research on efficacy and cost-effectiveness is necessary, taking into account both the cost of the genetic test and subsequent follow-up medical services (e.g., screening, genetic counseling).

## INDIVIDUAL CHARACTERISTICS

**Recommended strategies:** Provide information, Enhance skills, Provide support, Enhance access, Change consequences.

**Examples:** Financial and logistical barriers to cancer screening, Health behaviors after cancer.

**Interventions:** Patient navigation<sup>80</sup>, Interventions to improve physical activity and weight maintenance among rural survivors<sup>81</sup>.

Within the individual context, several factors may contribute to rural cancer disparities, such as gender, age, race, cigarette smoking, physical activity, income, and health insurance. Specifically, three CADCA Strategies for Community Change recommended to address individual contextual factors are: enhancing skills, providing support and enhancing access.

The first strategy is to provide information. For example, screening rates are particularly low among minorities, low-income populations, and rural populations. Barriers to colonoscopy screening can include inadequate health insurance, health systems barriers, logistical obstacles, and lack of information about risk factors and the importance of screening<sup>82</sup>. These barriers disproportionately affect residents of rural areas. Patient navigation can be an effective approach to ensuring that rural adults have access to information about preventive health screenings, such as colonoscopy, and to assist patients in overcoming barriers to cancer screening.

A study was conducted on an intervention utilizing professional patient navigators to implement strategies for addressing structural and individual barriers to colorectal screening, specifically for rural populations<sup>82</sup>. Patients who received navigation were more likely to complete recommended screening tests for colorectal cancer<sup>82</sup>.

A second strategy targeted at individuals is the provision of support. For example, Hispanic farmworkers in the United States are at higher risk for cervical cancer and experience higher mortality than the population in general. Specific barriers to cervical cancer care among Latina migrant workers in the United States include lack of awareness of the importance of cancer screening, cultural beliefs, cost, lack of health insurance, lack of transportation, and lack of childcare<sup>44</sup>. Patient navigators have also been utilized in this population to enhance communication between the clinic and the patients (i.e., making calls to schedule appointments, reschedule, and remind patients about appointments).

A third strategy to address individual contextual factors is to enhance skills. Rural women have higher obesity rates in general, making weight intervention in rural breast cancer survivors an important opportunity to help prevent breast cancer recurrence in this geographic population. Both obesity and weight gain of 6–10 kg or more after breast cancer diagnosis are associated with poor outcomes, including increased recurrence, breast cancer deaths, and all-cause mortality<sup>83,84</sup>. A recent study examined the impact of a group-based weight control intervention delivered through conference call technology to obese breast cancer survivors living in remote rural locations<sup>85</sup>. The intervention included a reduced calorie diet incorporating prepackaged entrees

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and shakes, moderate intensity exercise, and weekly group phone sessions. At the 6 month follow-up, significant changes were observed for weight, waist circumference, calories consumed, fruit and vegetable consumption, and physical activity. Significant improvements were also seen in quality of life domains, including mood, body image, and sexuality<sup>85</sup>. The group phone-based treatment delivery approach may help disseminate effective weight control interventions to hard-to-reach breast cancer survivors.

## SOCIAL CONTEXT

**Recommended strategies:** Provide information, Enhance skills, Provide support, Enhance access.

**Example:** Human papillomavirus (HPV) vaccination and cervical cancer screening.

**Interventions:** Rural Appalachian community efforts to improve access to Pap smear services, HPV vaccination, and colposcopy, Educational campaigns.

Several social contextual factors contribute to rural cancer disparities such as perceived support, community attitudes regarding tobacco and cancer, and community trust. Recommended CADCA Strategies for Community Change for the social context include providing information and enhancing access.

Cervical cancer mortality and incidence rates are consistently higher among rural rather than urban-dwelling women and are higher in the South than elsewhere in the United States<sup>17</sup>. Many women living in rural areas experience inadequate Pap smear and cervical cancer treatment availability. A recent study of women in rural North Carolina demonstrated that most women were willing to have themselves and their daughters vaccinated against HPV, a group of viruses that can cause cervical and other cancers<sup>17</sup>. Additionally, women's vaccination acceptability was associated

with vaccine acceptability for their daughters. This study provides support for the current practice of vaccine marketing as a cervical cancer or cancer prevention vaccine rather than as an HPV vaccine. Additionally, the cost of the vaccine appears to be an influential consideration for women in this traditionally underserved population. Promoting awareness of programs that offer free or lower cost vaccines, for example, the federal Vaccines for Children Program, may also increase uptake of this vaccine in rural areas.

Social marketing campaigns have shown positive results in increasing HPV vaccination rates in rural areas. The social marketing campaign initiated by county health departments in a primarily rural and racially diverse part of North Carolina increased HPV vaccine uptake among preteen girls<sup>86</sup>. Most mothers who responded to the survey had heard about or seen HPV vaccine campaign messages. The study showed a significant intervention effect on HPV immunization rates in two rural counties<sup>86</sup>. This evaluation supports the expansion of the pilot campaign in other rural and racially diverse areas to increase HPV vaccination among the age group for whom the vaccine is routinely recommended.

## PHYSICAL CONTEXT

**Recommended strategies:** Change consequences, Physical design, Modify/change policy.

**Example:** Travel distance to access healthcare.

**Interventions:** Mobile cancer screening, Telemedicine, Community gardens, Smoke-free policies to reduce exposure to secondhand smoke.

Aspects of the physical context that are linked to rural cancer disparities include travel distance, occupational/environmental exposures, and the built environment. Three recommended CADCA Strategies for Community Change

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to intervene on physical contextual factors that influence health are enhancing access, physical design changes, and policy change.

Activities that enhance access/reduce barriers are intended to improve the accessibility and ease of use (and reduce barriers) of programs, processes, and services related to health.

Activities used in rural settings to reduce travel distance to access health care include mobile screening/treatment and telemedicine.

Mobile cancer screening and treatment have successfully connected rural communities with health care services. Services provided by

mobile units include various cancer screenings, prevention education, early detection, and health counseling. For example, UT Southwestern Medical Center's Moncrief Cancer Institute and Harold C. Simmons Comprehensive Cancer Center began using the Mobile Cancer Survivor Clinic in 2015. The Mobile Cancer Survivor Clinic offers several types of screening, including 3-D mammography and colon cancer screenings, private exam rooms, exercise facilities for one-on-one training, and high-speed telemedicine links to cancer experts and counseling services at UT Southwestern's Moncrief Cancer Institute in Fort







Worth and the Harold C. Simmons Comprehensive Cancer Center in Dallas. Mobile screening is well received by patients, is accurate, and increases screening among underserved patients.

Telemedicine is the use of technology to remotely deliver health care, health information, or health education. It involves real-time interaction between patients and providers, allowing for access to care for underserved populations<sup>87</sup>. Tele-oncology visits are similar to traditional face-to-face visits and include consenting to treatment, describing the telemedicine process, taking a patient's medical history, and performing a physical exam (conducted by the provider at the remote location). Tele-oncology practices have been largely well received by patients, and costs are similar to costs of traditional care<sup>87</sup>.

The second CADCA Strategy recommended is changing the physical design. This includes a

range of activities, such as increasing lighting in particular neighborhoods, installing sidewalks to promote safe physical activity, and creating healthier food environments. In communities where healthy food is not readily available, it is difficult for community members to eat healthfully. There are almost 2 million U.S. households who live in “food deserts”, or areas with limited access to grocery stores<sup>88</sup>. This is particularly true for those in rural areas. Lack of access to grocery stores is associated with eating a poorer quality diet<sup>89-92</sup>. Food deserts often have greater availability of convenience stores, which have few fresh food options but many unhealthy foods. Many scientific studies have suggested that food deserts may negatively affect health outcomes; however, other studies have shown that even after healthier food options are more widely available in food deserts, many consumers continue to make unhealthy choices based on personal preferences<sup>93</sup>.

More research is needed to determine how access influences the types of foods consumers purchase and eat. Communities can work to change these unhealthy food environments through interventions such as community gardens and programs to increase the availability of fresh fruits and vegetables in convenience stores and small markets; however, such interventions may work best as part of comprehensive, multi-level interventions that include community education and media efforts.

The third CADCA Strategy applicable to rural cancer disparities stemming from problems with the physical context is modifying/changing policies. Many policies have been implemented to reduce exposure to environmental/occupational carcinogens, including secondhand smoke. Secondhand smoke is a known lung cancer carcinogen and people living in low-income areas, including rural areas, have higher rates of exposure to secondhand smoke. Smoke-free air policies are associated with decreases in exposure to secondhand smoke, tobacco use, and increases in cessation<sup>94</sup>. Additionally, implementation of smoke-free policies is associated with fewer cardiovascular and asthma events requiring hospital treatment<sup>94</sup>. State and local ordinances establish smoke-free regulations for indoor workplaces, indoor spaces, and outdoor public places<sup>94</sup>. Additionally, smoke-free bans can be voluntary, such as in homes, cars, or workplaces not covered by state or local ordinances. As of July 1, 2015, 24 states, Washington, D.C., Puerto Rico, the U.S. Virgin Islands, and 763 municipalities have 100% smoke-free laws covering non-hospitality workplaces, restaurants, and bars, which cover more than 60% of the U.S. population<sup>95</sup>; however, those living in rural areas are less likely to be covered by smoke-free policies. Implementing local policies, when possible, is an effective tool to reduce exposure to secondhand smoke in rural communities.

## POLITICAL & ECONOMIC ENVIRONMENT

**Recommended strategies:** Change policy, Enhance access.

**Example:** Rural areas are less likely to be covered by smoke-free laws.

**Interventions:** Policy advocacy.

The political and economic environment influence rural cancer disparities in numerous ways. These include community policies, laws, and the availability of health services in a given community, as well as the make-up of communities themselves (for example, rates of poverty or segregation). A recommended strategy for this level is to modify and change policy. Activities within this strategy are intended to make laws and policies more health-promoting; two examples include: 1) tobacco policy change and 2) improvements in access to care.

Changes in policy have long been recognized as important for population health. One of the strongest examples of policies that improve population health and also reduce disparities

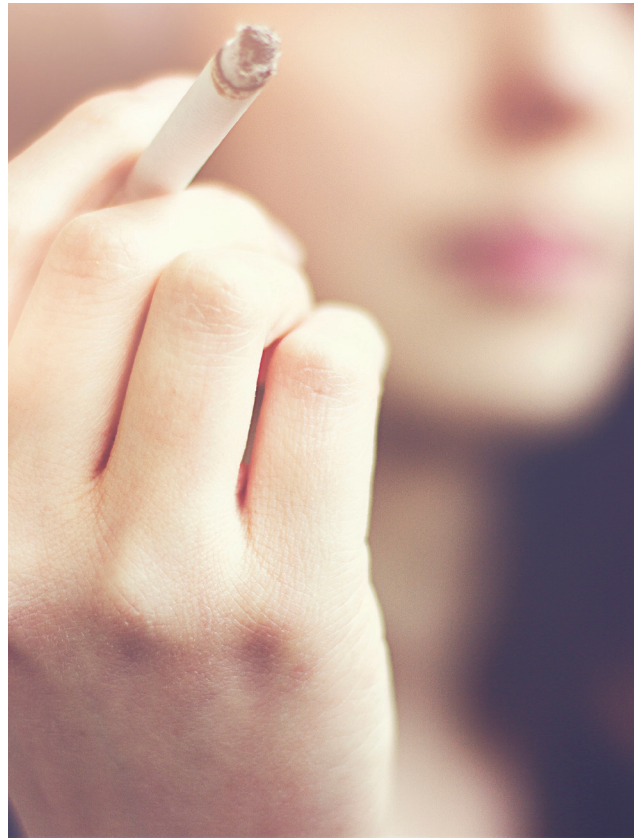
### CASE EXAMPLE: POLICY ADOPTION TO REDUCE TOBACCO EXPOSURE IN NORTH CAROLINA

Hospitals across the state individually adopted tobacco-free campus policies until 100% of hospitals were covered. School districts adopted tobacco-free campus policies individually until the state legislature passed a state-wide tobacco-free schools bill (Summerlin-Long, 2008). And, community colleges – often in rural areas – led the way in adopting tobacco-free campus policies starting in 2006 (Lee et al., 2009).

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is increasing the cost of tobacco products<sup>94</sup>. This can be done in several ways. State and federal governments, can increase taxes on tobacco products. Some counties (when not pre-empted by state laws) and municipalities can also raise tobacco taxes. While raising taxes on tobacco products is one of the strongest policy interventions, it can seem politically infeasible in the Southeastern U.S. where tobacco is so deeply rooted in culture; however, public opinion against tobacco taxes is not higher in this area than in other regions, and Southerners may be more persuaded by efforts to improve health and hospitality<sup>96</sup>. Southern legislators believe constituent opposition is greater than it really is and have erroneous beliefs about economic impacts<sup>97</sup>. It is recommended that health advocacy groups develop communication and outreach strategies, as well as informational resources to address these misconceptions. Alternatively, there may be non-tax approaches to increasing the per-unit cost of tobacco products, such as cigarette butt litter mitigation fees<sup>98,99</sup>. Additionally, it is recommended that advocacy strategies and communication efforts be tailored based on geographic location, history of tobacco control, and party affiliation<sup>96</sup>.

Researchers in Kentucky have identified best practices in promoting policy change in rural areas<sup>100</sup>, including hands-on technical support for counties based on their level of readiness for policy change. The authors note the importance of providing additional support to rural communities in building coalitions to change policies. Other tobacco control interventions include promoting tobacco-free places and spaces such as hospitals, schools, and colleges in rural



areas. These policies can be adopted at the organizational level, community level (providing there is no state preemption), or at the state level.

The policy and economic environment can also influence access to care, and strategies to modify and change policies can reduce disparities in access to care. In Delaware, reductions in disparities in colorectal cancer screening among African-American residents were achieved through comprehensive state-level policies promoting targeted outreach to improve screening, providing treatment to low-income persons diagnosed with colon cancer, and providing patient navigation services to promote access<sup>101</sup>. Similar strategies could be implemented in rural areas.

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## Concluding Summary

Residents of rural communities are vulnerable to poor cancer outcomes across the cancer continuum from prevention to end-of-life care, but communities can work with key stakeholders to address many factors that contribute to worse cancer outcomes. The GHEA Multi-level Model of Geographic Health Disparities can be used as a framework to assess

the risk/contributing factors to cancer health disparities in a particular community. Once the appropriate level of intervention is identified, the Intervention Guide for Geographic Disparities in Cancer & Tobacco can guide communities to potential intervention strategies. Through collective action, it is possible to improve the health and well-being of rural communities and reduce the burden of cancer in these areas.



## APPENDIX A: RESOURCES AND ADDITIONAL INFORMATION

### CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

#### Cancer Prevention and Control

The CDC is a leader in nationwide efforts to ease the burden of cancer. Through the Division of Cancer Prevention and Control (DCPC), the CDC works with national cancer organizations, state health agencies, and other key groups to develop, implement, and promote effective strategies for preventing and controlling cancer.

[www.cdc.gov/cancer/](http://www.cdc.gov/cancer/)

#### National Comprehensive Cancer Control Program

Comprehensive Cancer Control (CCC) is a collaborative and strategic approach used by communities and their partners to combine, share, and coordinate resources to reduce the burden of cancer.

[www.cdc.gov/cancer/ncccp/index.htm](http://www.cdc.gov/cancer/ncccp/index.htm)

#### National Breast and Cervical Cancer Early Detection Program (NBCCEDP)

The CDC's NBCCEDP provides low-income, uninsured, and underserved women access to timely breast and cervical cancer screening and diagnostic services.

[www.cdc.gov/cancer/nbccedp/](http://www.cdc.gov/cancer/nbccedp/)

#### Colorectal Cancer Control Program (CRCCP)

The CDC's Colorectal Cancer Control Program (CRCCP) helps states and tribes across the United States increase colorectal (colon) cancer screening rates among men and women aged 50 years and older. An increase in screening rates will reduce illness and death from colorectal cancer.

[www.cdc.gov/cancer/crccp/index.htm](http://www.cdc.gov/cancer/crccp/index.htm)

#### Cancer Data & Statistics

The United States Cancer Statistics: 1999–2012 Incidence and Mortality Web-based Report (USCS) combines cancer registry data from CDC's National Program of Cancer Registries and the National Cancer Institute's Surveillance, Epidemiology, and End Results Program to produce a new set of official federal statistics on cancer incidence (newly diagnosed cases) for a single year. The current report provides state-specific and regional data for cancer cases diagnosed and for cancer deaths for the most recent year for which incidence data are available.

[www.cdc.gov/cancer/dcpc/data/](http://www.cdc.gov/cancer/dcpc/data/)

#### Behavioral Risk Factor Surveillance System (BRFSS)

BRFSS is the nation's premier system of health-related telephone surveys that collect state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. BRFSS completes more than 400,000 adult interviews each year, making it the largest continuously conducted health survey system in the world.

[www.cdc.gov/brfss/](http://www.cdc.gov/brfss/)

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## **COMMUNITY ANTI-DRUG COALITIONS OF AMERICA (CADCA)**

For over two decades, Community Anti-Drug Coalitions of America (CADCA) has been on the front lines addressing and preventing underage and excessive alcohol use, tobacco, illicit drugs, and the misuse and abuse of prescription and over-the-counter medicines. Today, CADCA is the nation's leading substance abuse prevention organization, representing over 5,000 community-based coalitions across the United States and in 23 countries who work to create safe, healthy and drug-free communities.

**[www.cadca.org/](http://www.cadca.org/)**

**[www.preventtobaccouse.org](http://www.preventtobaccouse.org)**

## **Geographic Health Equity Alliance (GHEA [gee-ah])**

An extension of CADCA, the Geographic Health Equity Alliance serves as a national network of coalitions, state programs, national organizations, researchers, community-based agencies, place-based organizations and other pertinent stakeholders and parties, dedicated to raising awareness about geographic health disparities related to tobacco and cancer and to support the development, dissemination and implementation of effective public health practices.

**[www.nohealthdisparities.org/](http://www.nohealthdisparities.org/)**

## **Community Commons**

Community Commons is a place where data, tools, and stories come together to inspire change and improve communities.

**[www.communitycommons.org/](http://www.communitycommons.org/)**

## **County Health Rankings & Roadmaps**

The County Health Rankings & Roadmaps program is a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute. The annual County Health Rankings measure vital health factors, including high school graduation rates, obesity, smoking, unemployment, access to healthy foods, the quality of air and water, income, and teen births in nearly every county in America. The annual Rankings provide a revealing snapshot of how health is influenced by where we live, learn, work and play.

**[www.countyhealthrankings.org](http://www.countyhealthrankings.org)**

## **The Guide to Community Preventive Services**

The Guide to Community Preventive Services is a free resource to help individuals or coalition/ organizations choose programs and policies to improve health and prevent disease in local communities. Systematic reviews are used to answer these questions: Which program and policy interventions have been proven effective?; Are there effective interventions that are right for my community?; What might effective interventions cost; what is the likely return on investment?

**[www.thecommunityguide.org/](http://www.thecommunityguide.org/)**

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## **National Cancer Institute**

### **Research-tested Intervention Programs (RTIPs)**

RTIPs is a searchable database of evidence-based cancer control interventions and program materials and is designed to provide program planners and public health practitioners easy and immediate access to research-tested materials.

**[rtips.cancer.gov/rtips/index.do](http://rtips.cancer.gov/rtips/index.do)**

### **State Cancer Profiles**

State Cancer Profiles characterizes the cancer burden in a standardized manner to motivate action, integrate surveillance into cancer control planning, characterize areas and demographic groups, and expose health disparities. Interactive graphics and maps provide support for deciding where to focus cancer control efforts.

**[statecancerprofiles.cancer.gov/](http://statecancerprofiles.cancer.gov/)**

### **Cancer Control P.L.A.N.E.T**

Cancer Control P.L.A.N.E.T. portal provides access to data and resources that can help planners, program staff, and researchers design, implement and evaluate evidence-based cancer control programs.

**[cancercontrolplanet.cancer.gov/](http://cancercontrolplanet.cancer.gov/)**

## **Rural Health Association**

The National Rural Health Association (NRHA) is a national nonprofit membership organization with more than 20,000 members. The association's mission is to provide leadership on rural health issues through advocacy, communications, education and research. NRHA membership consists of a diverse collection of individuals and organizations, all of whom share the common bond of an interest in rural health.

**[www.ruralhealthweb.org/](http://www.ruralhealthweb.org/)**

## APPENDIX B: GLOSSARY OF TERMS

**Adaptation:** in biology, an adaptation, also called an adaptive trait, is a trait with a current functional role in the life of an organism.

**Built Environment:** the buildings, roads, utilities, homes, fixtures, parks and all other man-made entities that form the physical characteristics of a community.

**BRCA 1 & 2:** human genes that produce tumor suppressor proteins and are associated with hereditary breast and ovarian cancer syndrome. These proteins help repair damaged DNA and, therefore, play a role in ensuring the stability of the cell's genetic material. When either of these genes is mutated or altered, such that its protein product either is not made or does not function correctly, DNA damage may not be repaired properly.

**Cancer Control:** a public health approach aimed at reducing the burden of cancer in a population. Planning integrated, evidence-based and cost-effective interventions throughout the cancer continuum is the most effective way of tackling the cancer problem and reduce the suffering caused to patients and their families.

**Carcinogen:** something that causes cancer.

**Colonoscopy:** a test that allows a doctor to look at the inner lining of the large intestine (rectum and colon). The doctor uses a thin, flexible tube to look at the colon. A colonoscopy helps find ulcers, colon polyps, tumors, and areas of inflammation or bleeding.

**Comorbidities:** the simultaneous presence of two chronic diseases or conditions in a patient.

**Community Health Worker:** members of a community who are chosen by community members or organizations to increase health knowledge and self-sufficiency in communities through activities such as outreach, community education, informal counseling, social support and advocacy

**Contextual Factors:** characteristics of the ecology/environment.

**Efficacy:** in a randomized trial, the ability to produce a desired or intended result.

**Evidence-based:** uses facts, data, evidence, scientific studies, and other objective or scientifically derived information; tested; shown to work; proven to work.

**Faith-based organization:** an organization based on a particular religious ideology, has religiously oriented mission statements and often draws its activists (leaders, staff, volunteers) from a particular religious group (places of worship, groups of spiritual leaders, religious schools and related health and human service organizations).

**Food deserts:** a geographic area where affordable and nutritious food is hard to obtain, particularly for those without access to an automobile.

**Genes:** are made up of DNA and act as instructions to make molecules called proteins.

**Gene mutation:** a permanent alteration in the DNA sequence that makes up a gene, such that the sequence differs from what is found in most people.

**Health disparities:** differences in health indicators that, all conditions being equal, should not exist among groups of people.



**Hereditary cancer syndromes:** inherited mutations in specific genes that may increase a person's likelihood of developing cancer; an example is BRCA 1 & 2.

**HPV:** Human papillomavirus (HPV) is a viral infection that is passed between people through skin-to-skin contact. There are more than 100 varieties of HPV, but most emphasis is given to the 40 varieties that affect the genitals, mouth, or throat, that are passed through sexual contact and cause cancer.

**Incidence:** the development of new cases of disease in a given population.

**Intervention:** actions, treatments, and programs that include health promotion, specific protection, early case finding and prompt treatment, disability limitation and rehabilitation.

**Mastectomy:** the surgical removal of one or both breasts, partially or completely, usually carried out to treat breast cancer.

**Meta-analysis:** statistical technique for combining the findings from independent studies. Meta-analysis is most often used to assess the clinical effectiveness of healthcare interventions.

**Metro:** metropolitan (metro) areas include: (1) central counties with one or more urbanized areas; urbanized areas (described in the next section) are densely-settled urban entities with 50,000 or more people. (2) Outlying counties that are economically tied to the core counties as measured by labor-force commuting. Outlying counties are included if 25 percent of workers living in the county commute to the central counties, or if 25 percent of the employment in the county consists of workers coming out from the central counties—the so-called “reverse” commuting pattern.

**Morbidity:** the effects of a disease.

**Mortality:** a measure of deaths in a given population, location or other grouping.

**Non-metro:** Non-metro counties are outside the boundaries of metro areas and are further subdivided into two types: (1) Micropolitan (micro) areas, which are non-metro labor-market areas centered on urban clusters of 10,000-49,999 persons and defined with the same criteria used to define metro areas. (2) All remaining counties, often labeled “noncore” counties because they are not part of “core-based” metro or micro areas.

**Outcome:** result

**Patient navigation:** a process by which an individual—a patient navigator—guides patients with a suspicious finding (e.g., test shows they may have cancer) through and around barriers in the complex cancer care system to help ensure timely diagnosis, treatment, and supportive care

**Qualitative data:** data that can be arranged into categories that are not numerical. These categories can be physical traits, gender, colors or anything that does not have a number associated with it.

**Quantitative data:** information about quantities; that is, information that can be measured and written down with numbers. Some examples of quantitative data are height, blood pressure, and age.

**Risk factor:** attribute, characteristic or exposure that makes it more likely, is the reason for, or increases the chance a person or group of people will get sick, hurt, or die. People's beliefs and attitudes, what they do and do not do, where they live and work, their age, and family health history are some of the reasons people are more or less likely to develop health problems.

**Rural:** A general descriptor to describe a geographic area with lower population density. Common rural-urban categorization systems include the USDA Rural-Urban Continuum (RUC) and the Rural-Urban Commuting Area (RUCA) Codes.

**Smokeless tobacco:** tobacco that is chewed or snuffed rather than smoked by the user.

**Stakeholder:** a person or group with an interest or concern in something.

**Statistically significant:** statistical hypothesis testing is traditionally employed to determine if a result is statistically significant or not. This provides a “p-value” representing the probability that random chance could explain the result. In general, a 5% or lower p-value is considered to be statistically significant, i.e. the result is not due to chance.

**Telemedicine:** use of telecommunication and information technologies to provide clinical health care at a distance; telemedicine helps eliminate distance barriers and can improve access to medical services that would often not be consistently available in distant rural communities.

**Underserved:** Medically Underserved Areas (MUAs) may be a whole county or a group of contiguous counties, a group of county or civil divisions or a group of urban census tracts in which residents have a shortage of health care services, including medical professionals and facilities.

## REFERENCES

1. Hausauer A, Keegan T, Chang E, Glaser S, Howe H, Clarke C. Recent trends in breast cancer incidence in US white women by county-level urban/rural and poverty status. *BMC Med.* 2009;7(1):31.
2. Singh GK, Williams SD, Siahpush M, Mulhollen A. Socioeconomic, Rural-Urban, and Racial Inequalities in Us Cancer Mortality: Part I—All Cancers and Lung Cancer and Part II—Colorectal, Prostate, Breast, and Cervical Cancers. *J Cancer Epidemiol.* 2011;2011:1–27.
3. Glover S, Moore CG, Samuels ME, Probst JC. Disparities in access to care among rural working-age adults. *J Rural Health.* 2004;20(3):193–205.
4. Muskie School of Public Services, Kaiser Commission on Medicaid and the Uninsured. Health Insurance Coverage in Rural America [Internet]. Washington, DC: Kaiser Family Foundation; 2003. Available from: <http://kff.org/uninsured/report/health-insurance-coverage-in-rural-america/>
5. Laditka JN, Laditka SB, Probst JC. Health care access in rural areas: Evidence that hospitalization for ambulatory care-sensitive conditions in the United States may increase with the level of rurality. *Health Place.* 2009 Sep;15(3):761–70.
6. Arcury TA, Gesler WM, Preisser JS, Sherman J, Spencer J, Perin J. The Effects of Geography and Spatial Behavior on Health Care Utilization among the Residents of a Rural Region. *Health Serv Res.* 2005 Feb;40(1):135–56.
7. Martin SL, Kirkner GJ, Mayo K, Matthews CE, Larry J, Hebert JR, et al. Urban, rural, and regional variations in physical activity. *J Rural Health.* 2005;21(3):239–244.
8. Hansen AY, Umstattd Meyer MR, Lenardson JD, Hartley D. Built Environments and Active Living in Rural and Remote Areas: A Review of the Literature. *Current Obesity Reports*, 1-10. 2015 Sep 12.
9. Larson NI, Story MT, Nelson MC. Neighborhood environments: disparities in access to healthy foods in the U.S. *Am J Prev Med.* 2009 Jan;36(1):74–81.
10. Zahnd WE, Goldfarb J, Scaife SL, Francis ML. Rural-urban differences in behaviors to prevent skin cancer: an analysis of the Health Information National Trends Survey. *J Am Acad Dermatol.* 2010 Jun;62(6):950–6.
11. Tiggelaar SM, Rafalski M, Davidson MA, Hu Y, Burnett L. HPV knowledge and vaccine acceptability in Appalachian Tennessee and Kentucky, USA. *J Fam Plan Reprod Health Care Fac Fam Plan Reprod Health Care R Coll Obstet Gynaecol.* 2014 Jan;40(1):75–6.
12. Reiter PL, Katz ML, Ruffin MT, Hade EM, DeGraffenreid CR, Patel DA, et al. HPV Prevalence among Women from Appalachia: Results from the CARE Project. *PLOS ONE.* 2013 Aug 30;8(8):e74276.
13. Campbell CMP, Menezes LJ, Paskett ED, Giuliano AR. Prevention of Invasive Cervical Cancer in the United States: Past, Present, and Future. *Cancer Epidemiol Biomarkers Prev.* 2012 Sep 1;21(9):1402–8.
14. Reiter PL, Katz ML, Paskett ED. Correlates of HPV vaccination among adolescent females from Appalachia and reasons why their parents do not intend to vaccinate. *Vaccine.* 2013 Jun 28;31(31):3121–5.
15. Krieger JL, Katz ML, Kam JA, Roberto A. Appalachian and non-Appalachian pediatricians' encouragement of the human papillomavirus vaccine: implications for health disparities. *Womens Health Issues Off Publ Jacobs Inst Womens Health.* 2012 Feb;22(1):e19-26.
16. Moss JL, Gilkey MB, Rimer BK, Brewer NT. Disparities in collaborative patient-provider communication about human papillomavirus (HPV) vaccination. *Hum Vaccines Immunother.* 2016 Jan 19;0(0):1–8.

17. Fazekas KI, Brewer NT, Smith JS. HPV vaccine acceptability in a rural Southern area. *J Womens Health* 2002. 2008 May;17(4):539–48.
18. Leung J, McKenzie S, Martin J, McLaughlin D. Effect of rurality on screening for breast cancer: a systematic review and meta-analysis comparing mammography. *Rural Remote Health*. 2014;14(2):2730.
19. Cole AM, Jackson JE, Doescher M. Urban-rural disparities in colorectal cancer screening: cross-sectional analysis of 1998-2005 data from the Centers for Disease Control’s Behavioral Risk Factor Surveillance Study. *Cancer Med*. 2012 Dec;1(3):350–6.
20. Coughlin SS, Leadbetter S, Richards T, Sabatino SA. Contextual analysis of breast and cervical cancer screening and factors associated with health care access among United States women, 2002. *Soc Sci Med*. 2008 Jan;66(2):260–75.
21. Nguyen-Pham S, Leung J, McLaughlin D. Disparities in breast cancer stage at diagnosis in urban and rural adult women: a systematic review and meta-analysis. *Ann Epidemiol*. 2014 Mar;24(3):228–35.
22. Paquette I, Finlayson SRG. Rural Versus Urban Colorectal and Lung Cancer Patients: Differences in Stage at Presentation. *J Am Coll Surg*. 2007 Nov;205(5):636–41.
23. Parikh-Patel A, Bates JH, Campleman S. Colorectal cancer stage at diagnosis by socioeconomic and urban/rural status in California, 1988–2000. *Cancer*. 2006;107(S5):1189–1195.
24. Singh GK. Rural-urban trends and patterns in cervical cancer mortality, incidence, stage, and survival in the United States, 1950-2008. *J Community Health*. 2012 Feb;37(1):217–23.
25. Chow CJ, Al-Refaie WB, Abraham A, Markin A, Zhong W, Rothenberger DA, et al. Does Patient Rurality Predict Quality Colon Cancer Care?: A Population-Based Study. *Dis Colon Rectum*. 2015 Apr;58(4):415–22.
26. Dragun AE, Huang B, Tucker TC, Spanos WJ. Disparities in the application of adjuvant radiotherapy after breast-conserving surgery for early stage breast cancer. *Cancer*. 2011 Jun 15;117(12):2590-8.
27. Baldwin L-M, Andrilla CHA, Porter MP, Rosenblatt RA, Patel S, Doescher MP. Treatment of early-stage prostate cancer among rural and urban patients. *Cancer*. 2013 Aug 15;119(16):3067–75.
28. Schroen AT. Impact of Patient Distance to Radiation Therapy on Mastectomy Use in Early-Stage Breast Cancer Patients. *J Clin Oncol*. 2005 Jul 5;23:7074–80.
29. Schootman M, Aft R. Rural-urban differences in radiation therapy for ductal carcinoma in-situ of the breast. *Breast Cancer Res Treat*. 2001;68(2):117–125.
30. Celaya M, Rees J, Gibson J, Riddle B, Greenberg E. Travel Distance and Season of Diagnosis Affect Treatment Choices for Women with Early-stage Breast Cancer in A Predominantly Rural Population (United States). *Cancer Causes Control*. 2006;17(6):851–6.
31. Jacobs LK, Kelley KA, Rosson GD, Detrani ME, Chang DC. Disparities in urban and rural mastectomy populations : the effects of patient- and county-level factors on likelihood of receipt of mastectomy. *Ann Surg Oncol*. 2008 Oct;15(10):2644–52.
32. Andrykowski MA, Burris JL. Use of formal and informal mental health resources by cancer survivors: differences between rural and nonrural survivors and a preliminary test of the theory of planned behavior. *Psychooncology*. 2009 Dec 16;19(11):1148–55.
33. Butow PN, Phillips F, Schweder J, White K, Underhill C, Goldstein D, et al. Psychosocial well-being and supportive care needs of cancer patients living in urban and rural/regional areas: a systematic review. *Support Care Cancer*. 2011 Sep 29;20(1):1–22.

34. Weaver KE, Geiger AM, Lu, L, Case LD. Rural-urban disparities in health status among US cancer survivors. *Cancer*. 2013;119(5):1050–1057.
35. Lukwago SN, Kreuter MW, Holt CL, Steger-May K, Bucholtz DC, Skinner CS. Sociocultural Correlates of Breast Cancer Knowledge and Screening in Urban African American Women. *Am J Public Health*. 2003;93(8):1271–4.
36. Viswanath K, Breen N, Meissner H, Moser RP, Hesse B, Steele WR, et al. Cancer Knowledge and Disparities in the Information Age. *J Health Commun Int Perspect*. 2006;11(1 supp 1):1–17.
37. Katz M, Reiter P, Corbin S, de Moor J, Paskett E, Shapiro C. Are rural Ohio Appalachia cancer survivors needs different than urban cancer survivors? *J Cancer Surviv*. 2010;4(2):140–8.
38. Weaver KE, Palmer N, Lu L, Case LD, Geiger AM. Rural–urban differences in health behaviors and implications for health status among US cancer survivors. *Cancer Causes Control*. 2013 May 16;24(8):1481–90.
39. Virnig BA, Ma H, Hartman LK, Moscovice I, Carlin B. Access to home-based hospice care for rural populations: Identification of areas lacking service. *J Palliat Med*. 2006 Dec;9(6):1292–9.
40. Temkin-Greener H, Zheng NT, Mukamel DB. Rural-urban differences in end-of-life nursing home care: facility and environmental factors. *The Gerontologist*. 2012 Jun;52(3):335–44.
41. Wang H, Qiu F, Boilesen E, Nayar P, Lander L, Watkins K, et al. Rural-Urban Differences in Costs of End-of-Life Care for Elderly Cancer Patients in the United States. *J Rural Health Off J Am Rural Health Assoc Natl Rural Health Care Assoc*. 2015 Nov 20.
42. Watanabe-Galloway S, Zhang W, Watkins K, Islam KM, Nayar P, Boilesen E, et al. Quality of end-of-life care among rural Medicare beneficiaries with colorectal cancer. *J Rural Health Off J Am Rural Health Assoc Natl Rural Health Care Assoc*. 2014;30(4):397–405.
43. Nayar P, Qiu F, Watanabe-Galloway S, Boilesen E, Wang H, Lander L, et al. Disparities in end of life care for elderly lung cancer patients. *J Community Health*. 2014 Oct;39(5):1012–9.
44. Warnecke RB, Oh A, Breen N, Gehlert S, Paskett E, Tucker KL, et al. Approaching Health Disparities From a Population Perspective: The National Institutes of Health Centers for Population Health and Health Disparities. *Am J Public Health*. 2008 Sep;98(9):1608–15.
45. Risk Factors for Cancer [Internet]. National Cancer Institute. [cited 2016 Feb 19]. Available from: <http://www.cancer.gov/about-cancer/causes-prevention/risk>
46. The Genetics of Cancer [Internet]. National Cancer Institute. [cited 2016 Feb 19]. Available from: <http://www.cancer.gov/about-cancer/causes-prevention/genetics>
47. Tobacco [Internet]. National Cancer Institute. [cited 2016 Feb 19]. Available from: <http://www.cancer.gov/about-cancer/causes-prevention/risk/tobacco>
48. Larsen SB, Olsen A, Lynch J, Christensen J, Overvad K, Tjønneland A, et al. Socioeconomic position and lifestyle in relation to breast cancer incidence among postmenopausal women: a prospective cohort study, Denmark, 1993-2006. *Cancer Epidemiol*. 2011 Oct;35(5):438–41.
49. Yost K, Perkins C, Cohen R, Morris C, Wright W. Socioeconomic status and breast cancer incidence in California for different race/ethnic groups. *Cancer Causes Control CCC*. 2001 Oct;12(8):703–11.
50. Ward E, Jemal A, Cokkinides V, Singh GK, Cardinez C, Ghafoor A, et al. Cancer Disparities by Race/Ethnicity and Socioeconomic Status. *CA Cancer J Clin*. 2004 Mar 1;54(2):78–93.

51. Slatore CG, Au DH, Gould MK, American Thoracic Society Disparities in Healthcare Group. An official American Thoracic Society systematic review: insurance status and disparities in lung cancer practices and outcomes. *Am J Respir Crit Care Med*. 2010 Nov 1;182(9):1195–205.
52. Robbins AS, Pavluck AL, Fedewa SA, Chen AY, Ward EM. Insurance status, comorbidity level, and survival among colorectal cancer patients age 18 to 64 years in the National Cancer Data Base from 2003 to 2005. *J Clin Oncol Off J Am Soc Clin Oncol*. 2009 Aug 1;27(22):3627–33.
53. Inverso G, Mahal BA, Aizer AA, Donoff RB, Chuang S-K. Health Insurance Affects Head and Neck Cancer Treatment Patterns and Outcomes. *J Oral Maxillofac Surg Off J Am Assoc Oral Maxillofac Surg*. 2016 Jun;74(6):1241-7.
54. Keegan THM, DeRouen MC, Parsons HM, Clarke CA, Goldberg D, Flowers CR, et al. Impact of Treatment and Insurance on Socioeconomic Disparities in Survival after Adolescent and Young Adult Hodgkin Lymphoma: A Population-Based Study. *Cancer Epidemiol Biomark Prev Publ Am Assoc Cancer Res Cosponsored Am Soc Prev Oncol*. 2016 Feb;25(2):264-73.
55. Kroenke CH, Kwan ML, Neugut AI, Ergas IJ, Wright JD, Caan BJ, et al. Social networks, social support mechanisms, and quality of life after breast cancer diagnosis. *Breast Cancer Res Treat*. 2013 May 9;139(2):515–27.
56. Morgan PD, Tyler ID, Fogel J. Fatalism Revisited. *Semin Oncol Nurs*. 2008 Nov;24(4):237–45.
57. Powe BD, Finnie R. Cancer fatalism: the state of the science. *Cancer Nurs*. 2003 Dec;26(6):454-465-467.
58. Ambroggi M, Biasini C, Giovane CD, Fornari F, Cavanna L. Distance as a Barrier to Cancer Diagnosis and Treatment: Review of the Literature. *The Oncologist*. 2015 Dec 1;20(12):1378–85.
59. CDC - Cancer Policy - NIOSH Workplace Safety and Health Topic [Internet]. [cited 2016 Feb 19]. Available from: <http://www.cdc.gov/niosh/topics/cancer/>
60. American Cancer Society. State of Science Fact Sheet - Occupation and Cancer [Internet]. 2016 Jan [cited 2016 Feb 19]. Report No.: No. 300214. Available from: <http://www.cancer.org/acs/groups/content/@nho/documents/document/occupationandcancerpdf.pdf>
61. National Cancer Institute. Secondhand Smoke and Cancer [Internet]. National Cancer Institute. 2011 [cited 2016 Feb 19]. Available from: <http://www.cancer.gov/about-cancer/causes-prevention/risk/tobacco/second-hand-smoke-fact-sheet>
62. Corley DA, Haas JS, Kobrin S. Reducing variation in the “standard of care” for cancer screening: Recommendations from the prospr consortium. *JAMA*. 2016 May 17;315(19):2067–8.
63. Chemotherapy Treatment Options and Policies [Internet]. [cited 2016 May 19]. Available from: <http://comm.ncsl.org/Store/ProductDetails.aspx?ProductId=58984352>
64. Oncology AS of C, others. The state of cancer care in America, 2014: A report by the American Society of Clinical Oncology. *J Oncol Pract*. 2014;10(2):119–142.
65. Community Health Workers [Internet]. [cited 2016 Jul 12]. Available from: <http://www.apha.org/apha-communities/member-sections/community-health-workers/>
66. Addressing Chronic Disease through Community Health Workers: A Policy and Systems-Level Approach - chw\_brief.pdf [Internet]. [cited 2016 Jul 12]. Available from: [http://www.cdc.gov/dhdsp/docs/chw\\_brief.pdf](http://www.cdc.gov/dhdsp/docs/chw_brief.pdf)

67. National Center for Cultural Competence. Sharing a Legacy of Caring: Partnerships between Health Care and Faith-Based Organizations [Internet]. Washington, DC: US Department of Health and Human Services, Bureau of Primary Health Care; 2001 [cited 2015 Sep 22]. Available from: <http://nccc.georgetown.edu/documents/faith.pdf>
68. Campbell MK, Hudson MA, Resnicow K, Blakeney N, Paxton A, Baskin M. Church-Based Health Promotion Interventions: Evidence and Lessons Learned. *Annu Rev Public Health*. 2007;28(1):213–34.
69. National Cancer Institute. National Cancer Institute Research-tested Intervention Programs (RTIPs) [Internet]. 2015 [cited 2015 Sep 22]. Available from: <http://rtips.cancer.gov/rtips/index.do>
70. Centers for Disease Control. CDC Tips From Former Smokers- Partners-Faith Based Organizations [Internet]. Tips From Former Smokers. [cited 2015 Sep 22]. Available from: <http://www.cdc.gov/tobacco/campaign/tips/partners/faith/>
71. Wakefield MA, Loken B, Hornik RC. Use of mass media campaigns to change health behaviour. *The Lancet*. 2010 Oct 15;376(9748):1261–71.
72. Freeman HP. Patient navigation: a community centered approach to reducing cancer mortality. *J Cancer Educ*. 2006;21(1 Suppl):S11–4.
73. Paskett ED, Harrop JP, Wells KJ. Patient navigation: An update on the state of the science. *CA Cancer J Clin*. 2011 Jul 1;61(4):237–49.
74. Freund KM, Battaglia TA, Calhoun E, Darnell JS, Dudley DJ, Fiscella K, et al. Impact of patient navigation on timely cancer care: the Patient Navigation Research Program. *J Natl Cancer Inst*. 2014 Jun;106(6):dju115.
75. BRCA1 and BRCA2: Cancer Risk and Genetic Testing Fact Sheet - National Cancer Institute [Internet]. [cited 2016 Feb 19]. Available from: <http://www.cancer.gov/about-cancer/causes-prevention/genetics/brca-fact-sheet>
76. Hawkins AK, Hayden MR. A grand challenge: Providing benefits of clinical genetics to those in need. *Genet Med*. 2011 Mar;13(3):197–200.
77. Kinney AY, Butler KM, Schwartz MD, Mandelblatt JS, Boucher KM, Pappas LM, et al. Expanding Access to BRCA1/2 Genetic Counseling with Telephone Delivery: A Cluster Randomized Trial. *J Natl Cancer Inst*. 2014 Dec 1;106(12):dju328.
78. Ramirez AG, Chalela P, Gallion KJ, Muñoz E, Holden AE, Burhansstipanov L, et al. Attitudes Toward Breast Cancer Genetic Testing in Five Special Population Groups. *J Health Disparities Res Pract*. 2015;8(4):124–35.
79. McDonald JA, Barg FK, Weathers B, Guerra CE, Troxel AB, Domchek S, et al. Understanding participation by African Americans in cancer genetics research. *J Natl Med Assoc*. 2012 Aug;104(7–8):324–30.
80. Cancer | At A Glance Reports | Publications | Chronic Disease Prevention and Health Promotion | CDC [Internet]. [cited 2015 Aug 17]. Available from: <http://www.cdc.gov/chronicdisease/resources/publications/aag/dcpc.htm>
81. Demark-Wahnefried W, Clipp EC, Lipkus IM, Lobach D, Snyder DC, Sloane R, et al. Main Outcomes of the FRESH START Trial: A Sequentially Tailored, Diet and Exercise Mailed Print Intervention Among Breast and Prostate Cancer Survivors. *J Clin Oncol*. 2007 Jul 1;25(19):2709–18.

82. Honeycutt S, Green R, Ballard D, Hermstad A, Brueder A, Haardörfer R, et al. Evaluation of a patient navigation program to promote colorectal cancer screening in rural Georgia, USA. *Cancer*. 2013 Aug 15;119(16):3059–66.
83. Befort CA, Nazir N, Perri MG. Prevalence of Obesity Among Adults From Rural and Urban Areas of the United States: Findings From NHANES (2005-2008): Obesity Among Rural and Urban Adults. *J Rural Health*. 2012 Sep;28(4):392–7.
84. Michimi A, Wimberly MC. Natural Environments, Obesity, and Physical Activity in Nonmetropolitan Areas of the United States: Natural Environments, Obesity, Physical Activity. *J Rural Health*. 2012 Sep;28(4):398–407.
85. Befort CA, Klemp JR, Austin HL, Perri MG, Schmitz KH, Sullivan DK, et al. Outcomes of a weight loss intervention among rural breast cancer survivors. *Breast Cancer Res Treat*. 2011 Dec 25;132(2):631–9.
86. Cates JR, Shafer A, Diehl SJ, Deal AM. Evaluating a County-Sponsored Social Marketing Campaign to Increase Mothers' Initiation of HPV Vaccine for Their Preteen Daughters in a Primarily Rural Area. *Soc Mark Q*. 2011 Mar 1;17(1):4–26.
87. Doolittle GC, Spaulding AO. Providing Access to Oncology Care for Rural Patients via Telemedicine. *J Oncol Pract*. 2006 Sep;2(5):228–30.
88. Walker RE, Keane CR, Burke JG. Disparities and access to healthy food in the United States: A review of food deserts literature. *Health Place*. 2010 Sep;16(5):876–84.
89. Morland K, Wing S, Diez Roux A. The contextual effect of the local food environment on residents' diets: the atherosclerosis risk in communities study. *Am J Public Health*. 2002 Nov;92(11):1761–7.
90. Zenk SN, Lachance LL, Schulz AJ, Mentz G, Kannan S, Ridella W. Neighborhood retail food environment and fruit and vegetable intake in a multiethnic urban population. *Am J Health Promot AJHP*. 2009 Apr;23(4):255–64.
91. Rose D, Richards R. Food store access and household fruit and vegetable use among participants in the US Food Stamp Program. *Public Health Nutr*. 2004 Dec;7(8):1081–8.
92. Morland K, Diez Roux AV, Wing S. Supermarkets, other food stores, and obesity: the atherosclerosis risk in communities study. *Am J Prev Med*. 2006 Apr;30(4):333–9.
93. Cummins S, Flint E, Matthews SA. New Neighborhood Grocery Store Increased Awareness Of Food Access But Did Not Alter Dietary Habits Or Obesity. *Health Aff (Millwood)*. 2014 Feb 1;33(2):283–91.
94. The Community Guide - Summary - Tobacco: Increasing the Unit Price of Tobacco Products [Internet]. [cited 2016 Feb 4]. Available from: <http://www.thecommunityguide.org/tobacco/increasingunitprice.html>
95. Americans for Nonsmokers' Rights Foundation. Overview List- How many smokefree laws? [Internet]. 2015 [cited 2015 Sep 18]. Available from: <http://www.no-smoke.org/pdf/mediaordlist.pdf>
96. Berg CJ, Solomon M, Barkley A, Bailey E, Goodwin SB, Kegler MC. Tobacco Taxes in the Southeastern US States: Views from Former Legislators. *Health Behav Policy Rev*. 2015 Sep;2(5):333–42.



97. Berg CJ, Ribisl KM, Thrasher JF, Haardörfer R, O'Connor J, Kegler MC. Reactions to Cigarette Taxes and Related Messaging: Is the South Different? *Am J Health Behav.* 2015 Sep;39(5):721–31.
98. Golden SD, Smith MH, Feighery EC, Roeseler A, Rogers T, Ribisl KM. Beyond excise taxes: a systematic review of literature on non-tax policy approaches to raising tobacco product prices. *Tob Control.* 2016 Jul; 25(4):377-85.
99. Schneider JE, Peterson NA, Kiss N, Ebeid O, Doyle AS. Tobacco litter costs and public policy: a framework and methodology for considering the use of fees to offset abatement costs. *Tob Control.* 2011 May;20 Suppl 1:i36-41.
100. Hahn EJ, Rayens MK, Adkins S, Begley K, York N. A controlled community-based trial to promote smoke-free policy in rural communities. *J Rural Health Off J Am Rural Health Assoc Natl Rural Health Care Assoc.* 2015 Jan;31(1):76–88.
101. Grubbs SS, Polite BN, Carney J, Bowser W, Rogers J, Katurakes N, et al. Eliminating Racial Disparities in Colorectal Cancer in the Real World: It Took a Village. *J Clin Oncol.* 2013 Jun 1;31(16):1928–30.





