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Cancer Prevention Health Services Research: An Emerging Field

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Abstract

In October 2009, The University of Texas MD Anderson Cancer Center hosted a symposium, “Future Directions in Cancer Prevention and Control: Workforce Implications for Training, Practice, and Policy.” This article summarizes discussions and an Internet and literature review by the symposium's Health Services Infrastructure Working Group. We agree on the need for the recognition of Cancer Prevention Health Services Research (CP-HSR) as a unified research field. With advances in cancer screening and increased emphasis on preventive services under healthcare reform, there is a growing need for investigators with both cancer prevention and HSR expertise to consider the comparative effectiveness of cancer screening methods, the cost-effectiveness of early detection technologies, and the accessibility of preventive care for individuals at risk of cancer. Defining CP-HSR as a field will provide investigators with credibility and will serve to draw more researchers to the field. Increasing funding to train individuals in CP-HSR will be important to help meet the anticipated demand for investigators with this specialized multidisciplinary expertise.

Keywords

Cancer prevention; Health service research; Cancer screening; Cost-effectiveness; Comparative effectiveness; Workforce

Introduction

The growing need to demonstrate value in health care, including in cancer care, combined with a projected workforce shortage of clinical oncologists and nurses by 2020, suggests that

cancer prevention efforts will need to be specifically targeted toward improving health outcomes while reducing healthcare costs [1, 2]. The passage of the Patient Protection and Affordable Care Act in March 2010, with its focus on prevention through the elimination of co-payments and deductibles for preventive services, makes the need to demonstrate value in cancer prevention even greater than before. Health services research (HSR) methods have not been routinely applied to the field of cancer prevention to determine which preventive services work best at what times, for whom, and at what sites of service, which post a need to integrate the two fields together. The growing demand for individuals with expertise to address issues of effectiveness, efficiency, and accessibility of cancer prevention services is likely to create a workforce shortage of both HSR investigators, and especially minority health services researchers, and cancer prevention investigators.

With these issues in mind, The University of Texas MD Anderson Cancer Center hosted a 2-day symposium in October 2009 entitled “Future Directions in Cancer Prevention and Control: Workforce Implications for Training, Practice, and Policy.” The goals of this symposium were to stimulate organized discussion from a wide variety of knowledgeable stakeholders within the cancer prevention community to gather data about the cancer prevention workforce and to form recommendations for preventing workforce shortages. Several working groups gathered at the symposium to discuss issues relevant to developing the cancer prevention workforce. Our Health Services Infrastructure Working Group included individuals with backgrounds in cancer prevention research, healthcare business management, and research administration. Discussion in this group, together with a review of the literature, revealed the need for a focused definition of the emerging field of cancer prevention health services research (CP-HSR) and the expansion of its workforce through increased funding and training opportunities for CP-HSR researchers.

Definition of CP-HSR as a Field

Even though a handful research studies have focused on CP-HSR, there is no existing definition of CP-HSR in the literature. As a new specialized field within HSR, CP-HSR faces some of the same challenges as the current HSR field did in its early iterations; it needs a definition of the field and its goals [3], a steady pipeline of trainees and diversity in the field [4], and adequate promotion of the value of this type of research [5]. Defining the field will help draw more investigators into this multidisciplinary research area and bring into focus the need for funding to prepare individuals for CP-HSR careers.

We begin with the definition of HSR. HSR is rooted in applied science at the intersection of public health and the study of public administration, policy analysis, health administration, community health, and traditional academic disciplines such as economics, sociology, and political science [3]. *Academy Health*, one of the largest associations of health service researchers in the nation, describes HSR as “the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to health care, the quality and cost of health care, and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities, and populations” [4]. For our purposes in defining CP-HSR, we use a more abbreviated definition of HSR: the study of how to make health care more effective, more efficient, or more equitable [6].

Our working definition of CP-HSR as a research field combines the study of HSR, cancer, and prevention (Fig. 1). The goal of CP-HSR is to make cancer prevention more effective; more efficient in the primary, secondary, and tertiary prevention stages; and more equitable.

To lessen the human and economic burden of cancer for families and society, we recommended that the field put more emphasis on primary CP-HSR than on secondary and tertiary cancer prevention. In contrast, HSR has traditionally focused on the secondary and tertiary prevention of disease, with special emphasis on understanding how to provide services to patients who are already ill [3].

HSR's Current Role in Cancer Prevention

After the symposium, we conducted a high-level literature search to develop an understanding of the range of CP-HSR studies for which findings have been published. Our search uncovered few published studies relative to the number of CP-HSR issues. More studies have been published in recent years, given the increased investment in HSR from federal funders, but not as many as expected.

We gathered additional information to identify oncology prevention and health promotion professional organizations and to determine whether these organizations have a stated commitment to HSR. We identified the *American College of Preventive Medicine* and the *American Society of Preventive Oncology* (ASPO). Only ASPO has cancer prevention as its primary mission: "...promote the exchange and dissemination of information and ideas relating to cancer prevention and control. Identify and stimulate new research areas in cancer prevention and control. Support the implementation and evaluation of national, state, and local programs and policies in cancer prevention and control" [5]. In spite of its focus on cancer prevention and control, ASPO does not have a focus group or special interest group for HSR. The American Society of Clinical Oncology [6] (ASCO) is recognized as a leading organization for oncology research, education, and practice. Their statement on cancer prevention is as follows: "ASCO is committed to providing oncologists with the necessary resources to ensure that every patient receives the highest quality care. As part of this overall goal, ASCO is dedicated to providing oncologists with cancer prevention education, training, publications, and communications." Currently, ASCO's cancer prevention efforts focus on supporting oncologists to combine cancer prevention with risk assessment in their clinical practice, cancer genetics, and tobacco cessation and control. However, like ASPO and many other cancer prevention organizations, ASCO does not have a focus group or special interest group associated with HSR.

We also conducted a high-level Internet search to identify academic medical centers with prevention clinics and prevention research centers to determine whether these groups integrate HSR into their academic training programs. The keywords we used for this search are listed in Table 1. Entities such as Stanford University's Prevention Research Center in the Department of Medicine [7] focus research toward health promotion at the individual and community levels. MD Anderson Cancer Center along with several other cancer centers, such as H. Lee Moffitt Cancer Center, have recognized the importance of cancer prevention by establishing dedicated oncology-focused prevention research and clinical services units. MD Anderson is expanding its HSR faculty through the creation of a new Department of Health Services Research in the Division of Cancer Prevention and Population Sciences, providing the potential for an increased emphasis on CP-HSR as part of the department's broad oncology HSR focus.

Why CP-HSR?

Information to Benefit Everyone

During the symposium, we discussed who might use CP-HSR study results and HSR data and concluded that there are many potential users of HSR data, including clinicians and allied health professionals, health administrators, policy makers, funding agencies and

foundations, health services researchers, and third-party payers. Groups that develop a guideline, such as the U.S. Preventive Services Task Force [8] or the National Comprehensive Cancer Network [9], both of which include experts such as primary care physicians and epidemiologists, systematically evaluate the evidence of the effectiveness in medicine and preventive services and publish guidelines such as cancer prevention screening. CP-HSR studies provide invaluable input for these groups as they develop guidelines.

Increasing attention to the value of cancer prevention at both the individual and societal levels raises ever more complex questions regarding how to assess both the cost and outcome components of the healthcare value equation. With healthcare costs in the USA approaching 20% of the gross domestic product [10], issues of cost require greater scrutiny, making it more challenging for policy makers who are compelled to seek answers to the complex questions that arise when considering trade-offs between cost and outcomes of cancer prevention approaches. Those trained in CP-HSR are well positioned to contribute to these discussions.

Closing the Gap between Cancer Prevention Discovery/Development and Public Health Impact

The accelerating pace at which discoveries in cancer risk assessment and prevention are being made in the laboratory, and translated into the clinic and the community, has created a demand for experts in CP-HSR for evaluating such discoveries on the basis of both outcome and cost. Trained professionals are needed to compare the effectiveness of cancer screening methods systematically, to evaluate the cost-effectiveness of early detection technologies, and to assess the accessibility of preventive care for individuals considered to have greater risk of developing cancer. By expanding the field of CP-HSR, this critical need for expertise could be improved.

CP-HSR can help define the benefits and harms of cancer prevention strategies and provide a framework for individuals and healthcare providers to consider in choosing between them. To reduce a person's cancer risk, many healthcare providers and much of the general population are unsure how to determine the best prevention approach for an individual because prevention is a series of trade-offs between benefits and harms on a personal and a societal level and because the multitude of media reports on prevention can create confusion. Providers and the general population need to be better educated to understand how to consider cancer risk and cancer prevention. Those trained in CP-HSR can help by conducting studies to identify the most effective approaches and interventions to help the general population understand and adhere to recommended screening guidelines and lifestyle changes. They can also improve these approaches by tailoring them to the level of risk for targeting subpopulations.

A great need exists for CP-HSR-trained individuals to communicate cancer prevention methods and approaches to those who can benefit the most. According to Doll and Peto [11], 75–80% of all cancer risk is attributed to factors that can be modified through behavior changes and reduction of harmful environmental exposures. Unfortunately, the adoption of these basic cancer prevention approaches has not been as widespread as one might wish. For example, in the 50 years since the 1964 U.S. Surgeon General's report about the relationship of tobacco use to increased cancer risk, smoking rates have declined from 42% to 20.8% in the USA, but decreases have varied by socioeconomic status. Individuals with a lower socioeconomic status have higher smoking rates and are less likely to quit smoking [12–14]. CP-HSR-trained investigators can study ways to target effective preventive interventions to such specified populations, define the best organizational approaches for the delivery of

these services, and encourage health policy makers to change systems to support and improve access to healthcare services, such as tobacco treatment programs.

CP-HSR investigators must also consider the comparative effectiveness and cost-effectiveness of cancer prevention screening methods. Several cancer prevention screening studies have included components of HSR or have addressed the application of HSR methods to ascertain the benefits of advances in cancer prevention screening. These include a 2010 study of the effect of screening mammograms on mortality from breast cancer [15, 16], the November 2010 release of initial findings from the National Lung Screening Trial (NLST) [17], and results from recent colon cancer screening studies [18]. Most of these are efficacy trials that were conducted in a clinical setting. Translating these prevention and screening approaches from the study setting of laboratory and specialty clinics to the real world, such as the community physicians' clinic office, in order to benefit the general population remains a significant challenge. The compelling results put risk of failure of efficacy studies outside study settings and suggest the need for investing in training CP-HSR investigators to discover and develop approaches to move what works in the specialty clinic to the real world.

Cancer prevention methods can be evaluated not only on their effectiveness in reducing cancer incidence and mortality rates but also in the context of how best to deploy limited screening resources. For example, in the USA, while mammography has been recommended for women older than 40 years since 2002, the effectiveness of such a broad recommendation may be in question. For example, in 2010, on the basis of results from a large cohort study of women older than 50 years, Kalager et al. [15] estimated that mammography screening accounts for a reduction of 2.4 breast cancer deaths per 100,000 person-years, and as described by Welch according to this estimate, 1,000 in 2,500 women will have at least one false-positive mammogram over 10 years of follow-up and that 5–15 women in 2,500 women will undergo unnecessary chemotherapy, irradiation, or surgery. Welch [16] also estimated that only 1 in 2,500 women who are 50 years of age and undergo mammography will avoid death from breast cancer because of this screening. On the other hand, results from a study of women of Mexican origin published in 2010 showed that more than half of the breast cancer cases ($n=119$) were diagnosed in women aged 50 years or younger, suggesting the need for tailored policies, education, and guidelines that address breast cancer screening for this population. Clearly, weighing the beneficial and harmful aspects of screening strategies for different groups when formulating screening guidelines is vital. Individuals trained in both cancer prevention and HSR would be well positioned to use the best methods and expertise from both disciplines when performing trade-off analyses and when structuring the complex issues that guideline committees need to consider in forming their recommendations.

Another example from cancer prevention calling for expertise in CP-HSR comes from the findings from the NLST [17] which showed, among former heavy smokers aged 55–74 years, 20% fewer lung cancer-related deaths in those screened with low-dose helical computed tomography than in those screened with standard chest X-rays. This is an important finding, but one that raises many issues about implementation, such as the choice of technologies and the potential harmful effects of screening guidelines for frequency of screening and for whom and the cost of X-rays vs. CT, for which CP-HSR investigators have the ability to evaluate.

A third area in cancer prevention for which CP-HSR skill is applicable is colorectal cancer screening tests, which are effective for identifying colon adenoma or lesions that, when removed, can prevent cancer or reduce mortality from cancer. A study by Lansdorp-Vogelaar [18] in the Netherlands indicated that screening colonoscopy when compared with

chemotherapy for colorectal cancer did not offer cost savings, although other screening tests, such as fecal occult blood testing and sigmoidoscopy, did. Recent studies [19] also indicated that computed (virtual) colonography shows promise as a cost-effective and less invasive technique for colon cancer screening and may result in higher screening rates compared with colonoscopy [20]. Results from these studies, taken together, can be confusing and may not offer practitioners sufficient guidance regarding the screening approach that could provide the most value to their patients. Investigators trained in CP-HSR, however, would be able to design comparative effectiveness studies and to advise health policy and guideline bodies in developing screening recommendations.

As these examples from cancer prevention demonstrate, a number of issues must be considered when systematically evaluating screening methods: (1) the screening intervention schedule, choice of technologies, and choice of quality assurance methods; (2) negative aspects of screening (e.g., needing to treat variant pathologies in false-positive cases and the frequency, range, and severity of the potentially harmful effects of screening); (3) cost-effectiveness (methods for improving the value of screening by improving quality and/or reducing costs); and (4) optimal implementation (e.g., methods for integrating lung cancer screening with tobacco cessation). How to address these issues for cancer survivors adds another layer of complexity.

One other issue to consider is the difference between reducing cancer mortality and reducing cancer incidence. For example, a fecal occult blood test, which is relatively inexpensive, can detect colon cancer at an early stage, treatable, and therefore reduce cancer mortality. On the other hand, a colonoscopy, an invasive procedure with some risk, can detect precancerous conditions in the form of colon polyps, which can be removed during the test and thus do not progress to cancer; colonoscopy therefore reduces cancer incidence. Here, the goals for screening must also be considered in addition to possible benefits, costs, and other factors to appropriately compare screening tests and provide a framework for decision making at the individual and societal levels. Individuals trained in both cancer prevention and HSR are well suited for such tasks.

Reducing Waste

Another area where those trained in CP-HSR can apply their expertise is the cost of health care associated with overuse of services and fraud issues that have received much attention in the media. Those who pay for medical services—both the government and private insurers—have about the growing overuse of these services, such as excessive preventive screening or even excessive screening in order to generate fraudulent billing for cancer prevention services. A 2009 NBC News exposé of large-scale Medicare fraud focused public attention on the rising cost of health care and called for the government, academia, and the healthcare industry to work together to better prevent fraudulent claims, a significant expense for Medicare and Medicaid [21]. According to an estimate by federal officials, at least US \$65 billion of a total of US \$818 billion in Medicare and Medicaid spending in 2008 was spent on fraudulent claims [22].

Despite dramatic examples of healthcare fraud, to our knowledge, no known statistics currently described the extent of fraud associated with cancer prevention specifically. However, it may be reasonable to assume that some of the fraud and abuse occurs in the area of cancer prevention service delivery. Individuals trained in both cancer prevention and HSR, whether they work for the federal or state government or for a private organization, could help uncover overuse and fraud through both their specialized knowledge of the evidence base for cancer prevention screening and their methodological expertise to apply HSR approaches to screening utilization rate analysis and other related data.

Establishing CP-HSR as a New Field

Challenges to Overcome

As a specialization of the broad, multidisciplinary field of HSR, CP-HSR is a field still in the early stages of definition with the potential for wide application, but it uses a particularly disparate set of theories, concepts, statistical approaches, and devices and instruments derived and adapted from other disciplines (e.g., economics, medical geography, behavioral science). For this reason, CP-HSR has legitimate claims as an emerging discipline within the field of cancer prevention and control. However, establishing CP-HSR as a field requires overcoming a number of sizable challenges. As stated above, CP-HSR lacks a widely adopted standard definition or conceptual structure in part because of its markedly multidisciplinary nature. It has diverse purposes (e.g., empirical data collection, policy, and operational decision making). It can be subdivided by purpose, such as “Methodological CP-HSR” that centers on the development of research instruments, study design, and statistical approaches specific to issues in cancer prevention screening. Another area is “Geographical CP-HSR” that aims to evaluate resource allocation and use as well as the design of more efficient strategies for achieving cancer prevention goals. This can take place on different levels (e.g., international, national, state or regional, county or local) and the focus can be on broad populations as well as specific population subgroups. It frequently focuses on and uses a wide range of time frames for data collection and analysis (e.g., historical, most current, future trends) [23]. It is conducted in many different settings (e.g., academia, government, clinical health care) by individuals from diverse professional backgrounds (e.g., healthcare providers, economists, psychologists, geographers). Consequently, the breadth of the field results in a discipline that is diffuse, even to those in it, which makes attracting professionals and trainees to the field difficult.

Because the topics within CP-HSR are broad, CP-HSR education, promotion, and dissemination efforts are highly fragmented, limiting the ability of the component fields to build upon each other's previous successes easily. In our discussions, we commented that a lack of racial diversity in the CP-HSR workforce may exist as it is a challenge inherent in the HSR [24] field as well. We also noted that CP-HSR may suffer from limited coordination of resources to support its efforts and the translation of CP-HSR into practice and that those outside the field, even within cancer prevention, may have a limited understanding of the potential uses of CP-HSR. As a result CP-HSR contributions may not be considered or included in the planning of policy activities. Furthermore, many who may play important roles in cancer prevention might not be recognized or counted as CP-HSR practitioners and the value of using their CP-HSR contributions realized. These current limitations of CP-HSR can stagnate the innovation, growth, and promotion and effectiveness of cancer prevention services offered, to the detriment of the health of the general population.

Funding Support for CP-HSR

We identified four funding agencies that have invested research funds in the CP-HSR area: the U.S. Department of Health and Human Services' Agency for Healthcare Research and Quality, National Institutes of Health, and Centers for Disease Control and Prevention, the American Cancer Society, and the Cancer Prevention and Research Institute of Texas (CPRIT). For fiscal years 2009 and 2010, US \$84 million in funding was earmarked from the Federal Recovery Fund for 25 R18 and 36 R01 grants to promote HSR. The American Recovery and Reinvestment Act of 2009 funded a total of 18 grant mechanisms for the National Institutes of Health (including the National Cancer Institute), of which seven focused on CP-HSR; in addition, one American Cancer Society grant focused on CP-HSR, and one National Cancer Institute grant for cancer prevention centers targeted studies to

promote, evaluate, and improve cancer screening for lung, colorectal, or cervical cancer in 2010 (Table 2). The Centers for Disease Control and Prevention supports disease prevention and HSR through a number of mechanisms, including its Preventative Services and Health Services block grants [25] and programs from its Division of Cancer Prevention and Control. For all of these agencies, defining CP-HSR as a field and establishing its goals would help sharpen the focus of grant proposals on studies of effectiveness, efficiency, and access to preventive services.

A relatively new and important source of funding is the Cancer Prevention grant program sponsored by the Cancer Prevention and Research Institute of Texas [26]. This program provides funding for unique projects and new partnerships aimed at increasing screening and vaccination rates with a preference for those employing novel methods. Since its inception in 2009, CPRIT has funded over US \$30 million in prevention grants. While the majority of funding provided in these grants supports the delivery of cancer prevention services, many of these grants include an evaluation component that takes into account some aspect of the broad field of health services research, i.e. it access, quality, cost—generally at the community level. CPRIT's prevention grant program uniquely brings together the fields of cancer prevention and health services research, making Texas a robust CP-HSR laboratory for the nation.

In November 2010, the Agency for Healthcare Research and Quality was awarded US \$473 million to support patient-centered outcomes research as part of the American Recovery and Reinvestment Act [27] of 2009, which allocated a considerable portion for cancer screening and treatment research. Although it is encouraging to see an increase in funding that includes a CP-HSR focus, the American Recovery and Reinvestment Act funding was a one-time stimulus of short duration, with most funding scheduled to be expended by August 2011. We should continue to actively advocate for additional funding opportunities for CP-HSR from the Agency for Healthcare Research and Quality and the National Institutes of Health to help sustain CP-HSR and its positive impact on health systems.

Developing CP-HSR Practitioners

With the shortage of HSR and cancer healthcare providers, a shortage of practitioners in the CP-HSR field can also be expected, especially of minority practitioners. We should develop undergraduate, graduate, and continuing education programs in public health schools and medical schools to train practitioners in the CP-HSR field through interdisciplinary programs such as biostatistics, epidemiology, environmental science, and health management and policy. We should also allocate or create fellowships or early career or career transition funds to encourage new practitioners to join the CP-HSR workforce.

To integrate CP-HSR into current healthcare practices, we agreed to advocate for CP-HSR recognition in healthcare policy and healthcare administration, as well as for healthcare providers, health profession educators, and the general population through research publications, presentations, and educational programs. We should develop strategies to encourage hospitals and cancer centers to promote CP-HSR as part of their services, much like cancer prevention programs that are implemented in the U.S. Department of Veterans Administration (VA) medical system. Furthermore, creating examination or certification criteria for assessing competency levels in CP-HSR could help ensure the high-quality training of CP-HSR practitioners.

Government Healthcare Systems as Models for Preventive HSR

Through discussion, we identified the VA system as a model for CP-HSR. Health Services Research and Development Service (HSR&D) [28] is one of the four research services

carried out by the Office of Research and Development at the VA and includes programs in biomedical laboratory, clinical science, health service, and rehabilitation research (Fig. 2). HSR&D, which focuses on comparative effectiveness research, supports the Quality Enhancement Research Initiative and provides intramural research grant awards of a maximum of US \$300,000 per year for up to 4 years. HSR&D also provides four-level career development intramural awards to maintain the HSR workforce within the VA system.

The Department of Defense has also conducted extensive research and evaluation studies to measure healthcare utilization, needs, and patient satisfaction. The Department of Defense component most relevant to HSR is its Health Program Analysis and Evaluation Division [29], which has conducted approximately 100 studies associated with its mission in the past 10 years. However, few of these studies were directed specifically to disease prevention, and only a handful focused on cancer prevention. The title of one of the prevention studies was “Morbidity, mortality and effectiveness of preventive measures among prime beneficiaries of the military health system compared to national and international populations” [30]. Another study, which addressed cancer prevention among other topics, was “Progress toward Healthy People 2000: Objectives among US Military Personnel” [31]. A more typical study title was “Risk Adjustment to Predict Healthcare Cost and Utilization” [30], and two descriptive research studies were “The Association between Obesity and Depressive Symptoms among US Military Active Duty Service Personnel, 2002” [32] and “The Association of Primary Site of Care (Civilian or Military) with the Use of Preventive Services among Female MHS Beneficiaries” [30]. One of the few HSR studies directly associated with cancer was “Colorectal Cancer Screening Guideline Adherence in the MHS.” Clearly, the infrastructure resources of the Department of Defense are capable of conducting descriptive studies, but it is not clear how the results of these studies are used to improve preventive services.

Conclusion

The Health Services Infrastructure Working Group from the “Future Directions in Cancer Prevention and Control: Workforce Implications for Training, Practice, and Policy” symposium concluded that there is a dearth of studies focused on cancer prevention and control that make use of HSR methods and perspectives. Because of the heterogeneity of the HSR workforce in general, it is difficult to precisely assess the size and scope of the organizations in which HSR personnel conduct their research. However, judging from the published literature, the output of CP-HSR is far below the need. We therefore conclude that the emerging CP-HSR field requires a focused definition and expansion of its workforce through consensus committees of recognized CP-HSR leaders, increased funding, and expanded training opportunities for CP-HSR researchers.

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Fig. 1. Cancer prevention health services research (*CP-HSR*) is the intersection between three existing fields

Fig. 2. Infrastructure of the U.S. Department of Veterans Affairs Health Services Research and Development (HSR&D) Service. HSR health services research

Table 1
Internet search keywords used (Google search engine) to find the preventive agencies or research centers

Keyword	Results
Health service research in cancer prevention	MD Anderson Cancer Center
U.S. preventive services	U.S. Preventive Services Task Force
Disease prevention research	Stanford Prevention Research Center

Table 2
Funding opportunities for CP-HSR in 2009 and 2010

Agency	Title of the request for application
National Institute of Health	05-CA-101 ^a Comparative Effectiveness Research in Cancer Primary Prevention
	05-CA-102 ^a Comparative Effectiveness Research on Cancer Screening
	05-CA-104 ^a Comparative Effectiveness Research on Cancer Treatment
	04-CA-111 Quality of Cancer Surgery and Outcomes
	04-CA-113 The Use of Health Informatics to Increase the Effectiveness of Cancer Prevention
	04-CA-114 Chemoprevention of Breast Cancer
National Cancer Institute	Research on the Economics of Diet, Activity, and Energy Balance ^b
American Cancer Society	The Role of Healthcare and Insurance in Improving Outcomes in Cancer Prevention, Early Detection, and Treatment

^aThe grant was designated as the National Institutes of Health highest priority

^bThis area of research is close by related to cancer prevention approaches