

Catchment Areas and Community Outreach and Engagement: The New Mandate for NCI-Designated Cancer Centers

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In 2012 (PAR 12-298), the NCI Funding Opportunity Announcement (FOA) required that designated cancer centers identify and describe their Catchment Area (CA) and document ongoing research that specifically addresses the cancer burden, risk factors, incidence, morbidity, mortality, and inequities, in the CA (1). The latest release of the Cancer Centers FOA in 2016 (PAR 17-095) was expanded to include a section on Community Outreach and Education (COE; ref. 2). Although these mandates are included in the FOA, only limited guidance is offered on what should be included in these sections to assist in preparing competitive applications. Here, we provide our opinion, based on guidance provided in the FOA, on how to approach both CA descriptions and COE sections to (i) prepare Cancer Center Support Grants (CCSG) applications; (ii) serve as a guidance for reviewers of these sections; and (iii) most importantly, truly understand and address the burden of cancer in a defined CA. The overall goal of these mandates from our perspective is to have a greater impact on the cancer burden in the CA's of the 69 NCI-designated cancer centers, and hopefully the United States in general. In this commentary, we include examples of how our respective cancer centers are using data to guide our efforts to address the cancer burden in our CAs and the indicators we are using to evaluate these efforts.

Catchment Area

Definition

A cancer center's CA is to be defined by each cancer center. According to the FOA, a CA can be defined by state, county, or zip code boundaries, but no further guidance is given. Common approaches to the selection of CA geographic boundaries have been to examine: (i) where cancer patients reside who are treated at the cancer center; (ii) geographic areas defined by marketing; (iii) where research participants live; or (iv) some combination of these three options. It matters less which strategy is used to define the CA, than that there was a rationale for how the CA boundaries were chosen, and there was some justification and agreement on the process and definition by either internal and/or external

advisory boards of the cancer center. Importantly, the entire cancer center membership needs to be informed on an ongoing basis of the CA, its description, and the cancer burden in the CA, as a guide for their research, regardless of whether their research is basic, clinical, or population science focused (3).

Description

Once the CA boundaries are determined, cancer centers are charged with describing and understanding the population characteristics of those diagnosed with cancer in their CA, not just in their own patients, but in the whole population. They are further charged with developing, testing, and implementing interventions (e.g., behavioral change programs, treatment approaches, and policies) that are likely to have the most impact on the population served. Centers, therefore, need to have an up-to-date and comprehensive view of the burden of cancer in their geographic region using available data. The cancer burden can be defined to include the most prevalent cancers, adverse trends in incidence and mortality, sources of cancer health inequities, economic costs, and lack of health care resources. Comprehensive cancer centers also strive to ensure that clinical trial accrual is representative of the gender and racial/ethnic mix in a CA population, which may differ from the center's cancer patient population (3).

The description of a CA should include: (i) how the CA was determined; (ii) demographics of the population; (iii) cancer risk factors (e.g., smoking rates, obesity, screening, and vaccination); (iv) cancer incidence and mortality rates (for the entire population and for relevant racial/ethnic and underserved populations); (v) time trends; and (vi) disparities in risk factors and outcomes.

Research relevant to the Catchment Area

According to the FOA, research relevant to the cancer burden in the CA should be discussed in each cancer center research program section, as well as in the COE section (see the discussion that follows). Research relevant to the CA applies to more than the population science programs, as investigators in any program can study topics related to their CA cancer burden. As described previously, CA descriptions include cancer risk factors as well as incidence and mortality. So, for example, if prostate cancer in African American men is prevalent in a given CA and if, in addition, there are disparities in rates between African American and other populations, then basic research examining inflammation, genetic mechanisms, or vitamin D metabolism that could contribute to an understanding of these disparities would be relevant CA research. Similarly, behavioral and educational interventions related to screening would be relevant as would clinical treatment trials for men diagnosed with prostate cancer. The analysis of the cancer burden in the CA may also reveal observations that are not addressed by existing research and may thus serve to drive new investigations relevant to filling these gaps (e.g., increasing melanoma rates in unstudied populations). In the

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grant application, each program must have a section describing research relevant to the CA, so every program leader should understand the cancer burden in the CA and how their program's research is addressing this burden.

Community Outreach and Engagement

The 2016 FOA provides seven areas that should be described in this section and includes allowable costs for leadership (Associate Director for Outreach) and staff that can be included in the CCSG budget and refers to the CA description for relevant research and activities. There should be some organizational structure for COE activities in the cancer center, which are described in this section. Another important point is that activities in this section should not include those targeting education for health care professionals, even those in the community, as these activities belong in another new section, Training and Education. According to the FOA, the COE Section should address the following:

- (i) Definition of the CA: This should include a description of the CA population demographics and special populations as well as the cancer burden, as discussed above.
- (ii) Research performed to address the needs of the CA: Here, describe examples of research projects being conducted by cancer center members to address the cancer burden. Again, include projects from across the spectrum of programs (basic, clinical, and population science) in the cancer center and across the cancer control continuum.
- (iii) Population engagement in the CA: This section should describe how the cancer center engages the populations in the CA in various research projects, conducts outreach and education, and involves the community in setting a research agenda for the cancer center. The organizational structure responsible for COE in the cancer center should also be highlighted in this section to include how it supports outreach and educational programming and any Community Advisory Boards.
- (iv) Disparities in the CA: A description of disparities can be addressed partially when describing the CA [i.e., in point (i) above], but more fully here along with the research being done to address these disparities.
- (v) Accrual to clinical trials to represent the CA demographics: This section should not replace the description of clinical trial accrual by the categories (i.e., intervention, therapeutic/nontherapeutic, and noninterventional) of studies and race/ethnicity and gender included in the Women and Minorities attachment to the Clinical Protocol and Data Management section of the application. It is meant to explain what strategies are being used to more closely reflect the distribution of women, racial/ethnic minorities, and other special population groups (e.g., rural, elderly, immigrants, Appalachian) in the center's clinical trials and other research studies.
- (vi) Translation of research into policy implementation: This section should be used to describe research that has led to policy change at the local, state, national, or international level, for example, legislation, standard of practice, insurance payment change, and inclusion in certification classes.
- (vii) Extension of the reach of research and policy within and beyond the CA: Research that is being done with other cancer centers or external entities, but led by the applicant

center, can fit into this section. Similarly, policy changes that started locally and were adopted nationally are relevant. Moreover, members who are part of national policy-making entities should be highlighted as should relevant cancer studies in the global arena.

Examples of Addressing the Cancer Burden in the CA

Here, we provide brief examples of how the CA definition, characterization, and community outreach/education were used to understand and address the cancer burden by each of our cancer centers, including community partnerships and tools used to track the cancer burden over time.

The Ohio State University Comprehensive Cancer Center (OSUCCC)

The CA of The Ohio State University Comprehensive Cancer Center (OSUCCC, Columbus, OH) is the entire state of Ohio (OH). This CA was chosen by center senior leadership (and endorsed by the External Scientific Advisory Board), as patients from all 88 OH counties receive care at the OSUCCC and ongoing research includes residents of all these counties. The state includes a population of 11.6 million (4) with few large metropolitan cities (e.g., Cleveland, Akron, Columbus, Cincinnati, Dayton, and Toledo) and rural areas in the northwest and southeastern part of the state, representing 59% of the land mass and 22% of the population. Minority populations include African Americans, Somali, Hispanic, and Asian; additional underserved populations include residents of the 32 Appalachian counties, the Amish, and residents of rural areas in the northwest.

Using data from the Ohio Cancer Incidence Surveillance System, Ohio Behavioral Risk Factor Surveillance System, and cancer mortality data from the Ohio Department of Health Statistics, the cancer burden in the CA was characterized using heatmaps to better identify hotspots and incidence rates. These data are reviewed annually to facilitate tracking the cancer burden over time. The cancer incidence and mortality burden focuses on lung, breast, colorectal and cervical cancers, both in terms of major prevalent cancers in the CA and cancers where disparities are observed in Appalachia or among minority populations. Higher than national averages for risk factors include high smoking rates in Appalachian OH, lower colorectal cancer screening rates, late-stage diagnosis for breast and colorectal cancer throughout the state, higher rates of high-risk human papillomavirus (HPV) infection in the Appalachian counties, high rates of obesity, and poor access to health care (e.g., mammography facilities, genetic counseling and testing, colonoscopy) in the Appalachian counties. Community outreach and education and partnership development and maintenance are under the auspices of the Center for Cancer Health Equity, an OSUCCC entity directed by E.D. Paskett and are used to understand and reach the various populations in the CA. Below, one example of a state-wide effort to address the cancer burden in the CA is described.

Recognizing the high mortality for colorectal cancer in the CA, the OSUCCC funded efforts to address colorectal cancer using philanthropic funds from Pelotonia, a grassroots charity cycling event. Prior NCI-funded research demonstrated the ability to do city-wide genetic counseling and testing successfully and counsel

family member to appropriate surveillance and testing (5). The Ohio Colorectal Cancer Initiative involved partnerships with 50 community hospitals throughout the state to identify and enroll all newly diagnosed colorectal cancer patients into a study with three parts: (i) to provide genetic counseling/testing to colorectal cancer patients and relatives of positive probands (6); (ii) an intervention testing whether a website and patient navigation would improve surveillance based on genetic testing results; and (iii) epidemiologic study exploring risk factors. Recruitment has concluded with over 3,000 colorectal cancer patients enrolled in the first study. Follow-up is ongoing to assess the impact on relatives in terms of surveillance uptake and reduction in colorectal cancer risk and incidence.

Helen Diller Family Comprehensive Cancer Center

On the basis of where patients reside who are treated at the UCSF Helen Diller Family Comprehensive Cancer Center (HDFCCC, San Francisco, California), the CA has been defined as the 48 counties of Northern California that includes 98% of all patients seen. This definition was approved by senior leadership and the HDFCCC External Advisory Board. The cancer burden among the over 15 million inhabitants of this area was described on the basis of data from the California Cancer Registry, which is part of the NCI Surveillance Epidemiology and End Results Program, the California Health Interview Survey, and economic data on cancer care costs. The burden was described in terms of incidence, mortality, trends, disparities, and hospital costs for all major cancer sites in each county. Each of the 10 research programs within the HDFCCC supported research relevant to the cancer burden, whether basic, clinical or population science focused, but the description of the CA identified gaps to further drive the research agenda across the cancer continuum.

Northern California is an extremely diverse region of the country in terms of race and ethnicity (e.g., 46% of the population is white), socioeconomic status, and industries, and a number of characteristics were identified that together created a unique pattern of disease for the region: high rates of breast and prostate cancer, marked disparities in prostate and colorectal cancer incidence and mortality, rapidly increasing incidence rates of melanoma, prevalent human immunodeficiency virus and HPV-associated malignancies, and high rates of hepatocellular cancer associated with the large Asian Pacific Islander population. Each of these areas was being studied in active research programs, and additional efforts are being planned as a result of ongoing analysis (3).

A number of examples of policy impact in tobacco legislation, quality improvement practices for prostate cancer screening, and novel approaches to colorectal cancer screening by linkage to annual flu shots are evident. In addition, the HDFCCC along with

numerous partners in the City and County of San Francisco developed the San Francisco Cancer Initiative (SF CAN) to reduce the cancer burden in the center of the CA by the integrated implementation of evidence-based interventions for the prevention and early detection of five of the most common cancers (i.e., breast, prostate, colorectal, lung, and other tobacco-induced cancers and hepatocellular cancer) that account for approximately half of cancer incidence and mortality in San Francisco, where cancer is the leading cause of overall mortality. SF CAN is a collective impact effort across the city that brings together the San Francisco Department of Public Health and UCSF, which conceived the initiative and provides ongoing scientific expertise, along with other major health systems and community coalitions to achieve the common goal of reducing the burden of cancer in the city (7).

Future Directions

As stated earlier, the underlying reason behind these new mandates is to facilitate making an "impact" on cancer for the patients and populations served by each NCI-designated cancer center. Thus, centers should consider how to utilize the data available to them to address how their research is contributing to the burden of cancer in their CA.

As in every section of the CCSG application, future directions are an important and necessary component. This section should be used to address weaknesses in the sections described above and areas where the cancer center intends to expand to better address the characteristics and challenges they have observed in their CA cancer burden. Moreover, methods for the regular monitoring of CA cancer burden are important to include, as trends, disparities, and new scientific knowledge continually influence the nature of the cancer burden. Without the tools and resources to support these activities, cancer centers cannot adequately test and implement effective evidence-based interventions in prevention, early detection, therapeutics, survivorship, and policy in their CA.

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