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Alvin J. Siteman Cancer Center: Cancer Prevention Perspective

Graham A. Colditz^{1,2}, Bettina F. Drake^{1,2}, and Timothy J. Eberlein²



ABSTRACT

We summarize Siteman Cancer Center catchment that covers 82 counties in southern Illinois and eastern Missouri. We note both the high poverty and cancer rates in many rural counties. Siteman Community Outreach and Engagement has developed a number of strategies to move towards

achieving health equity. These include NCI-funded research projects in rural clinics and outreach to improve access to cancer prevention services. To increase capacity for community-engaged research, we have developed and refined a Community Research Fellows Training Program.

Introduction

Understanding the populations served, cancer disparities, and unique health needs present in a center's catchment area is key to adequately serving the community. To better understand the needs of our patient population, we redefined our catchment area. Prior to 2015, the catchment only captured 13 counties and 63% of new patients. With our new expanded definition, we have a richer description of the populations we serve, especially including more rural residents. A comprehensive approach was used to redefine the catchment considering the service area where Siteman patients reside, total cancer mortality higher than U.S. national average, cancer-specific mortality hotspots, and medically underserved areas. County boundaries were drawn on the basis of these criteria including counties with documented excess mortality in the upper Mississippi Delta region that borders lower southern Illinois and southeastern Missouri. This newly defined catchment spans 82 counties and eclipses urban regions, such as the St. Louis area, as well as rural regions, including eastern Missouri and southern and central Illinois. (See **Fig. 1**). 89% of new patients at Siteman are from our catchment area. Within this area, there is a 20.5% minority population and 3.8% immigrant population. In addition, 28.5% of residents are below 200% of the federal poverty line, 37.9% have a high school diploma or below, and 14.6% are disabled. 50.4% are below the age of 40, 32.4% are

between the ages of 40 and 64, and 17.3% are 65 or above. Black residents are disproportionately represented in the intense areas of localized poverty in the St. Louis metropolitan region (1). The rural poverty rate in Missouri (16.5%), however, is higher than the urban poverty rate (12.3%; ref. 2). The cancer burden in our catchment area is much higher than that of the United States, in fact, 36.6% of counties in the catchment are in the highest U.S. quartile of cancer mortality. Of note, 16 counties along the Mississippi River in southeastern Missouri and southern Illinois, known as Hot Spot counties, have particularly elevated rates of colon and rectal cancer mortality (3). 10.5% of all patients come from these colorectal cancer Hot Spot counties, and 17.1% of patients with colorectal come from these counties.

Our cancer center's commitment to community engagement is longstanding and ongoing. Because of this geographic spread across 82 counties and two states, our cancer prevention efforts must overcome the obstacles that patients residing in both urban and rural underserved regions face. We have several NCI-funded community-engaged research projects that cover a significant portion of this catchment area focusing on delivering recommended prevention services and reducing disparities in cancer outcomes. Our commitment to addressing cancer inequalities related to race, ethnicity, and socioeconomic status has been strengthened by including rural populations in ongoing community involvement and research. The refined definition of our catchment area now enables us to examine how community-engaged research at the cancer center meets the needs of the community and to prioritize outreach and research programs that address the high burden of cancer within our catchment area.

The Siteman Program for the Elimination of Cancer Disparities (PECaD) has a mission to assure that all cancer patients and communities within the catchment area benefit from the clinical and scientific advances at Siteman which engaging communities to promote health equity. Siteman's Community Outreach and Engagement component is fulfilled through the efforts of PECaD. PECaD has developed a series of Data Dashboards to provide ongoing monitoring of the catchment, inform prioritization of outreach and screening activities,

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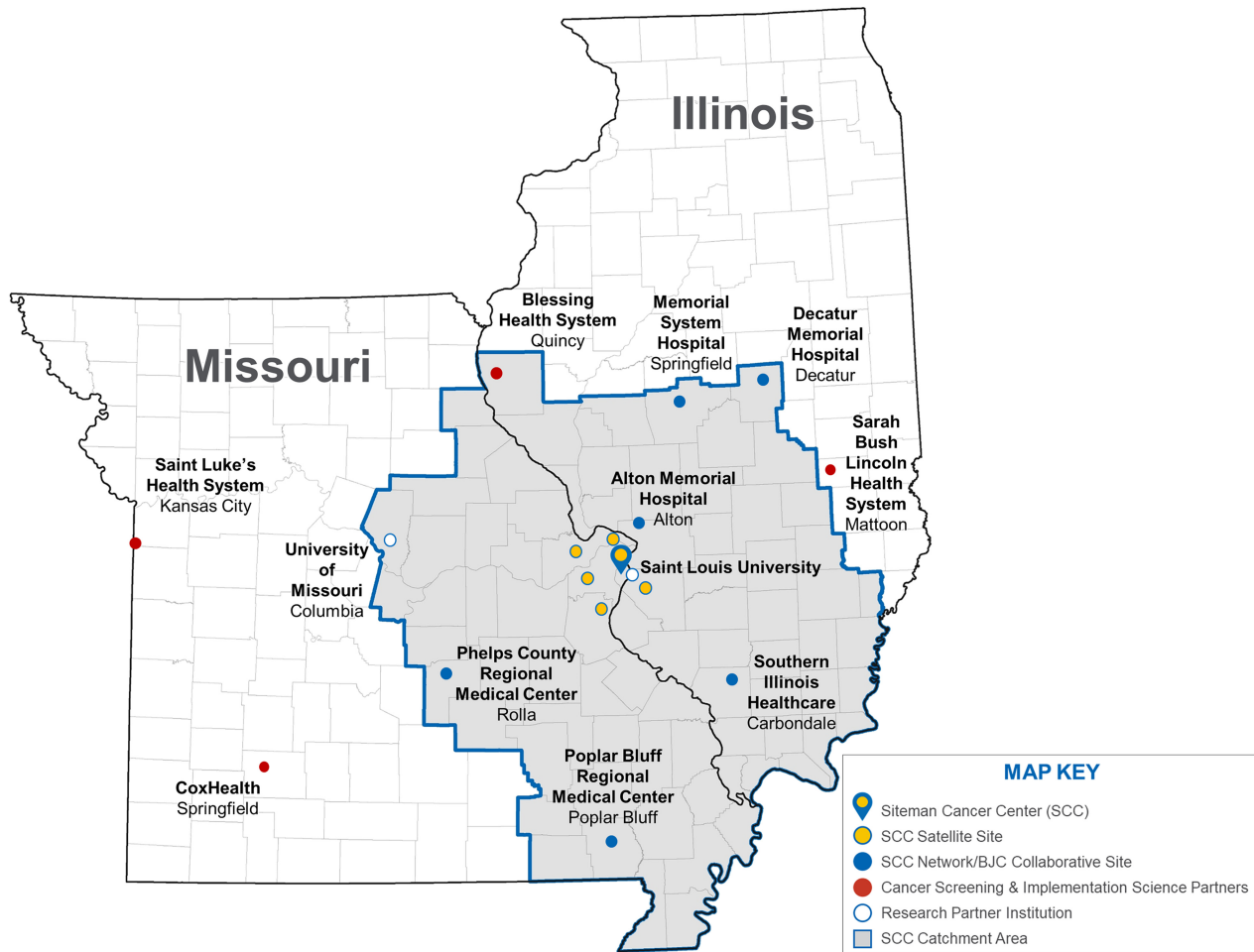


Figure 1. Siteman Cancer Center catchment includes 82 counties in eastern Missouri and Southern Illinois.

facilitate catchment-focused research, and set targets to monitor diversity in clinical trials. Diversity in clinical trials includes monitoring by race and ethnicity as well as rural communities and medically underserved areas. Siteman faculty conducted an analysis of data from electronic health records to quantify differences in healthcare use between patients exclusively visiting rural clinics and those exclusively visiting urban clinics within our catchment area. Findings showed that despite patients in rural clinics having worse health status, they had lower healthcare utilization (4). The updated definition of our catchment area has broadened our research focus to address the specific needs of rural communities within these underserved communities, as well as directed more attention towards conducting research in medically underserved areas.

The refinement of our original catchment area has broadened Siteman's outreach into rural areas. To ensure that the needs of rural and underserved populations remain at the forefront, we have incorporated a process to report on new patient and clinical trial enrollment data on a quarterly basis to senior leadership and program leaders. This process includes a

focus on medically underserved areas and rural populations, both inside and outside of our catchment area. Monitoring of the catchment's cancer burden identified a cluster of counties with significantly higher colorectal cancer mortality than the U.S. average. 31 counties in Siteman's catchment were identified in this hotspot which covers the predominantly rural areas of the catchment. Nationally, rural populations have an increased incidence of colorectal cancer (5). This coupled with the observation of a higher incidence of colorectal cancer in the Hot Spot counties has led us to direct additional NCI-sponsored resources to support screening and follow-up of positive screens in those areas. These findings further support Siteman's continued engagement with partner institutions throughout Missouri and Illinois, such as the BJC Collaborative and the Heartland NCI Community Oncology Research Program. Dr. James and colleagues have expanded a joint research initiative with Southern Illinois HealthCare (Carbondale, IL) to promote follow-up of positive tests and raise colorectal cancer screening rates building on Siteman community-engaged research in our catchment area (R01CA233848; ref. 6).

In addition, these collaborations have supported tobacco cessation delivery in health care settings and have great potential to positively impact the health of rural and medically underserved populations (7, 8). Research examining national differences in cancer incidence between urban and rural populations shows that cancer disparities in rural areas comprise of elevated incidence rates of cancers associated with tobacco, as well as lung and bronchus cancers (5). Siteman faculty joined with colleagues at the St Louis VA to bring smoking cessation and lung cancer screening to their rural clinics. Analyzing patient data from outpatient clinics within our catchment area, we found that smoking rates were higher in rural clinics compared with urban clinics. However, rural smokers were almost 3 times less likely to receive any treatment for smoking cessation than urban smokers (9). We also looked at the impact of a low-barrier, point-of-care, and easy-access smoking treatment program called ELEVATE, which includes decision support tools and an electronic health record-enabled smoking module that aim to enhance the efficacy and reach of smoking cessation treatment. The percentage of current tobacco smokers who received cessation treatment increased after using ELEVATE, and clinics that implemented ELEVATE had a higher treatment reach. Furthermore, the percentage of tobacco smokers who successfully quit smoking increased significantly after using ELEVATE, and clinics that used ELEVATE had higher success rates in smoking cessation (8).

Access to low-dose CT lung cancer screening varies by geographic region. While rural areas have limited access to low-dose CT lung cancer screening compared with urban areas, the causes of higher lung cancer mortality among rural residents are complex and cannot be attributed solely to access (10). Siteman faculty created a community-partnered Toolkit, aimed at assisting primary care practices in referring patients for lung cancer screening and guiding them towards the appropriate screening pathways in diverse settings. The Toolkit includes evidence-based interventions that can be modified to suit different situations and overcome obstacles to screening for both patients and providers. The interventions support smoking cessation counseling and shared decision-making and are customized for each screening center, providing details on local smoking cessation programs and specific screening center processes and contacts. To evaluate the effectiveness of the Toolkit, a stepped-wedge cluster randomized trial is currently in progress, in both urban and rural screening centers within our catchment area (11).

To minimize the burden of cancer inequalities, PECaD works through community collaborations to promote outreach and education, quality improvement and research, and training techniques. Institutional and NCI funding has addressed access to mammography and colorectal cancer screening, to mention a few. For example, to increase uptake of routine breast cancer screening, we collaborated with the Betty Jean Kerr People's Health Centers, a local federally qualified health center that serves an 87% African American patient population, to implement patient navigation services (12). Patient navigators provided

support for women to access mammography, diagnostic, and treatment services, facilitated every step of their care, including identifying and navigating women who were overdue for screening. Following the introduction of patient navigation, an increased number of women have received mammograms at this location. These services have continued and been expanded to include navigation for other services including yearly well visits and pediatric appointments. In the St. Louis region, community outreach and education continue to develop and improve community-engaged research to minimize disparities and raise awareness of research to encourage clinical trial enrollment.

To increase capacity for community-engaged research, we developed the Community Research Fellows Training (CRFT) Program, a research training course that uses a public health approach to teach community members about effective research engagement. Its objective is to heighten community understanding of how research can improve community health outcomes and promote community collaborations involving academic research institutions. As a result, the CRFT program is an essential facilitator in developing and sustaining partnerships and innovative projects to confront health disparities. Evaluations of the program show that between baseline and follow-up, participants' understanding of public health research improves and both participants and faculty members are satisfied with the program (13). More than 170 community members from the Siteman Cancer Center catchment areas in St. Louis, rural Missouri, and Illinois have graduated from the program since it began in 2013. Graduates of the CRFT program remain involved with PECaD and hold key leadership roles within it. In collaboration with rural partners, CRFT was adapted from a 15-week program to a 2-session workshop-style training over 2 days. Knowledge significantly increased ($P \leq 0.001$) and participant scores in research skills, confidence, and their understanding of conducting research in the community also increased. Lessons from our work can inform the implementation of similar programs that address rural cancer health through research and community capacity building between rural community partners and urban cancer centers (14). An additional adaptation of CRFT was implemented among African American girls aged from 10 to 14 called the Youth Research Fellows Training program was implemented as part of a summer camp, and participants showed improved knowledge of the methods of public health research afterwards. In addition, participants enjoyed attending the sessions and faculty rated their experience with teaching in the program highly, willing to do it again (15).

Another example of our outreach and education is the mobile mammography van. The mammography van travels to locations in the catchment area of Siteman Cancer Center, including St. Louis and rural southeastern Missouri. Regions with especially high rates at diagnosis of late-stage breast cancer are used as community and outreach sites. To maximize the utility of the van, a variety of approaches have been used, such as offering community education and organizing opportunities

prior to the van's arrival, creating promotional resources that specifically target women without insurance, deploying navigators to facilitate access to different breast cancer screening and treatment grant programs for women without insurance, and refining strategies based on community feedback (12).

From these examples and attention to our catchment disease and risk factor burden, the 2022–2027 strategic planning for Siteman Prevention and control was developed with community representatives in addition to health system leaders and researchers. The 3 overarching goals for Prevention and Control include exemplify the emphasis on equity as a central theme for our research and services: (i) *Achieve equity in access to, and engagement with, cancer prevention & control for all of the catchment population;* (ii) *Develop and deliver prevention, detection, and risk management in high-risk populations and cancer survivors in the catchment;* and (iii) *Create resources and accessible infrastructure to achieve equity.*

Cancer center leaders bear a greater responsibility to comprehend multiple aspects of our patient population. Despite documented health disparities experienced by patients living in medically underserved and/or rural areas, cancer center data reporting has not specifically identified these groups. Hence, accounting for disparities and representation should extend beyond race and ethnicity to encompass other socioeconomic and environmental exposures. Health disparities of various underrepresented groups must be considered in future policy

priorities and clinical trial portfolio decisions. Giving more attention to these characteristics in routine data surveillance and our outreach and research will not only benefit the patient and the community but will also enable our cancer center to further reduce cancer disparities. Ensuring the sustainability of access to services and resources is necessary to maintain reductions in cancer burden. To confront disparities, strategies involving community engagement play a pivotal role in identifying and resolving health issues, while fostering trust within the community. It is critical to continuously assess our progress and tailor programs to the evolving needs of the patient population. Adopting such an approach is crucial to effectively work towards cancer prevention in the most affected populations.

Authors' Disclosures

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