Colorectal Cancer Screening in Rural Community Health Clinics

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Introduction: Disparities exist in screening low income rural populations for colorectal cancer (CRC). Annual fecal immunochemical testing (FIT) offers a feasible method.

Objectives: Compare the effectiveness of two literacy informed telephone follow-up interventions to promote annual CRC screening with FIT among vulnerable populations.

Methods: A two-arm, randomized controlled trial was implemented in four rural community clinics. All eligible patients received literacy and culturally appropriate CRC information and a FIT test with simplified instructions. They were randomized to receive a personal (PC) or automated (AC) follow-up call at 4 or and again at 8 weeks if they had not returned their FIT test. Baseline screening rates at the rural clinics were 1-3%.

Results: Of 620 patients age 50-75 enrolled; 66% were African American, 55% women; 40% had limited literacy. FIT completion rates were 67% in PC arm and 69% in AC arm.

Discussion: Implementing health literacy influenced CRC education and screening strategies using the FIT and phone reminders dramatically increased FIT completion in rural community clinics. The less costly and time consuming automated call was equally effective as a personal call.

Extending Skin Cancer Screening to Isolated Populations

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Purpose: Melanoma is responsible for most skin cancer related deaths, yet incidence continues to rise. While community-based screening programs are being considered, access barriers indicate dermatologists alone cannot support the programming necessary, particularly in isolated communities. As such, Moncrief Cancer Institute, an affiliate of UT Southwestern, has partnered with the Department of Dermatology to develop curriculum for teaching nurses to perform visual skin exams as part of routine breast and cervical cancer screening. Effectiveness is defined by the ability to accurately identify skin lesions.

Approach: The curriculum includes didactic and clinical components, incorporating twenty-five hours of self-study learning modules, videos, shadowing, and standardized patient simulations. In a clinic setting, nurses are asked to identify lesions, which are then evaluated by a dermatologist.

Outcomes: Percentage improvement and changes in confidence level are calculated to determine effectiveness. Similarly, the diagnosis made by the nurse is linked with the dermatologist’s interpretation and percent agreement is calculated.

Conclusions: The success of this education program could expand service delivery, especially to isolated communities, resulting in the identification of skin malignancies at earlier, more treatable stages.
Rural-Urban Variation in Surgical Treatment, Lymph Node Examination, and Adequate Lymphadenectomy for Endometrial Cancer Patients

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Purpose: To assess rural-urban differences in endometrial cancer (EC) surgery, lymph node examination, and adequate lymphadenectomy (AL).

Approach: We analyzed SEER data on EC patients (2004 - 2013). We compared rural and urban patients on demographic and clinical characteristics and receipt of nodal examination and AL. We assessed rural-urban differences in trends of receipt of AL and performed logistic regression to evaluate differences in receipt of surgery, nodal examination, and AL for all ECs and for ECs stratified by histological type.

Outcomes: Rural patients were less likely to have any lymph nodes removed, had a smaller median number removed and a smaller proportion had AL (43.5% vs. 46.1%, p<0.001). Even after controlling for established risk factors, rural patients were less likely to receive surgery (OR=0.81; 95% CI=0.68-0.97), have lymph nodes examined (OR=0.85; 95% CI=0.85-0.95) and receive AL (OR=0.89; 95% CI=0.84-0.94).

Conclusion: Rural patients were less likely to have surgery, lymph nodes removed, and adequate lymphadenectomy. Future research should address the impact of access to care on surgical care and the impact of surgical disparities on adjuvant therapy and survival.

Addressing Health Disparities Among Rural Latina Cancer Survivors Using a Mixed-Methods Study Design.
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Introduction. Rates of cancer survivorship are increasing for most cancers. However, Latina cancer survivors tend to experience lower quality of life and higher levels of distress following cancer compared to non-Latina Whites (NLW). While social support resources can alleviate the negative psychosocial impact of cancer sequelae, there are often limited resource availability and uptake among Latina cancer survivors.

Objective. This presentation will include descriptions of the: qualitative and quantitative study design, recruitment strategies, cultural adaptations of the intervention, challenges and successes in data collection and intervention delivery.

Methods. This study included a qualitative needs assessment of Latina survivors of breast and gynecological cancers living a rural region of Washington State, development of a 10-week Spanish language survivor support program, and a randomized control trial (RCT) whose effectiveness was evaluated with psychosocial and biological outcomes. Intervention delivery and qualitative and quantitative data collection were conducted by promotores (lay health workers).

Conclusion: Challenges and successes of conducting the qualitative assessment, delivering the intervention, and data collection will be discussed. Future studies can build on the methodological insight gained from this project.
Addressing Rural Cancer Health Disparities: A Siteman-SIUSM Partnership

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The largely rural, socioeconomically disadvantaged central and southern Illinois regions experience significant cancer disparities. To address these, in 2015 the Siteman Cancer Center at Washington University School of Medicine (Siteman) and Southern Illinois University School of Medicine (SIUSM) established a Partnership in rural cancer disparities research. Our Partnership aims to advance cancer research collaboration and capacity, support SIUSM investigators, and encourage Siteman investigators to pursue rural cancer disparities research through collaborative pilot grants and training.

Thus far, the Partnership has fostered three new collaborations. Our first pilot, Health Literacy in the Context of Kidney Cancer & Smoking, was recently presented at an AACR Conference about cancer health disparities in medically underserved populations. In year two, we funded Supporting Decisions About Cancer Clinical Trials in Rural Cancer Centers and Assessing Head and Neck Cancer Awareness as a Function of Rural Residence. The pilot program and shared training has supported faculty collaboration, resulting in several federal grant proposals and multiple manuscripts and abstracts. These shared successes will foster further cooperation and innovation to address rural cancer disparities across our region.

Cancer Clear & Simple: A Health Literate, Community-Driven Cancer Education Program

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Background: In 2011, CHDI and Adams County representatives adapted an evidence based cancer education curriculum for a rural Wisconsin population (NCI’s National Outreach Network). The process resulted in Cancer Clear & Simple (CC&S). CC&S includes a 3-part curriculum, topical handouts and a facilitator guide; it has been adapted for use with African American and Latino audiences.

Purpose: Expand use of CC&S in Wisconsin, and test its efficacy and capacity to lead to behavior change. Approach: CHDI partnered with UW Extension to expand CC&S statewide (USDA Health and Safety award). CHDI collaborated with Adams County partners and E. Jacobs, MD, MPP to implement a CBPR project testing if CC&S leads to increased cancer knowledge, behavioral intent, and behavior change through medical record verification of cancer screening (American Cancer Society pilot award).

Outcomes:
- Trained over 30 new facilitators serving 22 counties
- Enrolled 68 participants in ongoing CC&S Adams County pilot study

Conclusions: CC&S is a community driven, health literate cancer education program poised for broad dissemination. Future efforts include expanded research with multiple populations and additional training in Wisconsin and
The Social Determinants of Health and the Modifiable Areal Unit Problem in Population Health Studies

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The Modifiable Areal Unit Problem (MAUP) presents a challenge to using census data to characterize the Social Determinants of Health (SDH) in public health studies. The problem introduces unknown levels of uncertainty. Associations of health outcomes with aggregate measures may be substantially weaker than with micro-level measures. To accommodate the lack demographic data in electronic health records, we have seen an increase in the number of health outcomes studies wishing to append to individual records the census and national survey based SDH of counties and zip codes. We use two different methods to highlight the MAUP. First we use the coefficient of variation of neighborhood (census block group) values within each county to characterize the MAUP across the nation. Second, we investigate the MAUP as it pertains to the specific disadvantaged populations which many large population health studies target, as SES characteristics of the neighborhoods where disadvantaged populations reside may differ significantly from the SES of the larger areas of aggregation. Finally, we discuss the spatial distribution of results across the nation, and in urban, micropolitan, and rural areas.

Partnering for Improvement: Current Efforts of a Research-Practice Partnership to Improve Physical Activity Program Penetration.

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The Cooperative Extension System (CES) leverages expertise of Master’s trained community-based health educators, paraprofessionals, and volunteers (herein: agents) to reach participants in rural communities. Physical activity promotion programs delivered in and supported by agents are more likely to reach those in need, improve behaviors, and be broadly adopted and sustained within practice settings. Through a research-practice partnership, we identified, adapted, and delivered two evidence-informed programs: FitEx (walking program for families) and LIFT (strength-training program for older adults). In year 1, six agents participated in the trial; participants (N = 80) improved across all objective functional fitness measures; and 100% of agents continued program delivery in year 2. In 2016, FitEx was delivered by 8 agents; participants (N= 324) self-reported an average physical activity increase from 3.2 miles to 6.2 miles per week; seven agents from Virginia and one from the state of Wyoming are delivering the program in 2017. The research-practice partnership aims to improve program penetration across counties and states to improve the proportion of Americans meeting physical activity recommendations in order to help manage and prevent chronic disease.
Exploring the Prevalence of Cancer Messaging within Rural African American Churches in South Carolina

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Purpose: African American (AA) churches may play an important role in providing rural communities with information about cancer prevention and control. The purpose of this research was to characterize cancer messages in rural AA churches.

Approach: Health-related print media (n=2166) was collected from 21 AA churches in South Carolina 2010 - 2013. Previous research by Harmon et al. found 1025 messages related to disease prevention or control, with cancer messaging most prevalent (n=316, 31%). Descriptive statistics were used to characterize these cancer messages in rural AA churches.

Outcomes: Rural churches (n=6, > 20 miles from city center) had fewer cancer messages than urban churches (17% vs 83%, respectively). Cancer messages in rural churches were most often about breast cancer (40%), found in flyers (40%), and crafted by churches (47%). These messages were less often culturally tailored (29%) or focused on prostate (24%) or colorectal cancer (7%).

Conclusions: Compared to more urban churches, rural churches had lower percentages of cancer messaging. Continued efforts are needed to work with rural churches in providing cancer messaging to reduce cancer disparities.

Rural Measures and Cancer Disparities Studies: Elucidating Intra-Rural Differences and Future Avenues for Research

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Rural status can be objectively measured using multiple designations within different geographic extents. One such example are Rural-Urban Continuum Codes (RUCCs), a United States Department of Agriculture measure that categorizes counties based upon their population size and proximity to metro areas. In our research, we have explored and found intra-rural cancer incidence and mortality differences in three different geographic settings using RUCCs: 1) within a single state (Illinois); 2) across multiple states in the Surveillance Epidemiology End Results database; 3) between federally designated regions (i.e. Mississippi Delta and Appalachian Regions). Two themes emerge from these studies. First, cancer outcomes differ across rural areas (i.e. not all rural is the same). Second, current rural measures may not capture the social and physical context of rurality for disparities research purposes. Future research should aim to continue to elucidate intra-rural cancer differences. Further, more appropriate measures and methods to study rural cancer disparities should be utilized. This may include developing more continuous rural-urban measures and utilizing multilevel modeling and principal component analysis to better account for rural context in cancer disparity research.
Arkansas Rural Community Health Study (ARCHS)
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Rural populations, regardless of race /ethnicity, are disproportionately burdened by cancer risk/mortality, but are underrepresented in health research. Reasons for this have included geographical access, lack of awareness of health research studies and a perceived distrust of the research community. We employed unique recruitment methods to reach out to women in rural communities in Arkansas for participation in breast cancer research projects. We recruited at large cancer awareness venues (Komen, Relay for Life) and a variety of non-cancer-related community events. We accompanied the University of Arkansas Medical Sciences mobile mammography unit to reach underserved women in the more rural parts of Arkansas. At the time of consent, participants completed a brief breast cancer risk questionnaire, provided a saliva sample for genomics, and indicated willingness to be re-contacted for more in-depth studies. Using these methods, we obtained questionnaire data and a DNA specimen (saliva) from over 26,000 Arkansan women in approximately 5 years with more than 95% of participants agreeing to re-contact. This cohort is an outstanding resource for exploring cancer risk/mortality in rural communities.

Post-operative Mortality in Non-Small Cell Lung Cancer: Evaluation of a Rural and Urban Population Based Cohort
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Purpose: Lung Cancer effects more than 160,000 persons annually in the United States, often from rural communities. Surgical resection is the most effective treatment, but high post-operative mortality rates diminish the benefit. We examined rural vs. urban residence and other potential risk factors for postoperative mortality in a population-based cohort.

Approach: We examined lung cancer resections from 2009-2016 in 11 mid-south hospitals. The primary outcome was the 30-, 60-, 90-, 120-day post-operative mortality. Demographics, disease characteristics, and clinical characteristics were evaluated as potential risk factors.

Outcomes: Of the 2,258 patients, 52% were male and 29% lived in rural communities. The 30-, 60-, 90-, and 120-day post-operative mortality rates were 4%, 6%, 8%, and 9%. Rural residence was not associated with postoperative mortality (all p>0.15). After controlling for all other factors, ASA status, prior cancer, and Charlson comorbidity score were associated with 30-day mortality. The adjusted model for 120-day mortality indicates associations with age, tumor size, intra-operative blood loss, ASA, prior cancer, and Charlson score.

Conclusion: Age, ASA, Charlson score, blood loss, and tumor size were risk factors for post-operative mortality, rural residence was not.
Development of a New Inter-institutional Partnership to Assess Health Literacy Disparities in the Context of Kidney Cancer and Smoking

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Purpose: Rural Illinois residents have some of the highest kidney cancer incidence and mortality rates in the US. This disparity is not fully explained by the limited number of urologists within the region. Urban-rural variation in behavioral risk factors associated with kidney cancer and/or late stage at diagnosis are currently understudied.

Approach: To address this gap, urologists from Southern Illinois University School of Medicine developed a pilot research project with Washington University investigators specializing in health behavior and disparities research. The goals of the pilot project are to assess urban-rural variation in: 1) health & cancer literacy; 2) smoking status & knowledge of its association with kidney cancer; and 3) degree of bother caused by urologic symptoms. The research team is also monitoring its progress in building new collaborative partnerships and recruitment activities that span urban and rural-serving institutions.

Interim Outcomes & Conclusions: Recruitment and enrollment are currently underway, and preliminary quantitative results will be available this summer. Leveraging partner institution resources to streamline data collection and management across multiple clinic locations enhances research capacity in urban and rural settings.

Funding: This work is supported by the National Cancer Institute, grant numbers P20 CA192966 (Washington University School of Medicine) and P20CA192987 (Southern Illinois University School of Medicine).

Impact of Mobile Mammography Program in a Rural State

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Screening mammography confers a significant reduction in mortality from breast cancer. However, many women in rural America face financial and geographic barriers to screening mammography. Arkansas is a rural state with 42 percent of residents live in a nonmetropolitan county. One third of counties in Arkansas do not have FDA-approved mammography facility. Underutilization of screening mammography continue to lead to breast cancer health disparity. Arkansas has the third highest breast cancer mortality to incidence ratio in the US. This study examined all women screened in a mobile mammography program, UAMS MammoVan, from 2010 to 2016. The mobile mammography vehicle traveled more than 110,000 miles across Arkansas and performed 12,875 screening mammograms for over 6,187 women in a seven year period in counties lack of FDA-approved mammography facility. An overall breast cancer detection rate of 6.0 per 1,000 was found in this mobile mammography program serving rural women who otherwise did not have access to early breast cancer detection. This mobile mammography program demonstrated reduced geographic barrier to screening and a relatively high breast cancer detection rate among this underserved population.
Partnering to Prevent and Control Cancer (PPCC): An Academic-community Partnership to Address Physical inactivity-related Cancer Health Disparities in Rural Cancer Survivors

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Physical activity (PA) can reduce the risk of cancer recurrence and the risk of developing comorbidities after cancer diagnosis. Yet, less than 20% of cancer survivors meet PA recommendations, and rural cancer survivors are more likely to be physically inactive, contributing to poorer cancer survivorship outcomes in this population. Strategies to increase PA have not been adequately tailored to meet rural cancer survivors’ unique needs and have been unsuccessful. Partnering to Prevent and Control Cancer (PPCC) is an ongoing study, which aims to develop an academic-community partnership to address health disparities in rural cancer survivors in Pennsylvania. Outreach strategies focus on identifying and contacting potential partners through existing networks and collaborations. PPCC partnership recruitment aims are completed via active and passive recruitment strategies to identify and recruit a sizeable and representative sample to inform the adaptation of a PA intervention for rural cancer survivors and to participate in the adapted community-based PA intervention. PPCC activities will inform larger dissemination and implementation efforts to ultimately reduce physical inactivity-related cancer health disparities in rural cancer survivors in Pennsylvania.

Prospectively Evaluating the Use of Diagnostic PET/CT in a Multidisciplinary Model of Lung Cancer Care in a High Mortality Region of the US.

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Purpose: Lung cancer is the deadliest cancer in the US, particularly in rural areas. Therefore, accurate staging after initial diagnosis is important in determining appropriate therapy. Multidisciplinary (MD) clinics may improve treatment, but limited data exists on the utilization of specific resources.

Approach: We prospectively evaluated the implementation of a MD model of care in a high mortality region and compared outcomes with a parallel serial care (SC) arm. The primary outcome for the current analysis was the use of PET/CT as a diagnostic tool. Data was analyzed using logistic regression.

Outcomes: We enrolled 527 patients (347 SC, 180 MD) with a median age of 67. MD patients had significantly higher odds of receiving a PET/CT compared to SC (OR: 3.645 [2.174, 6.133]; p <0.0001).

Conclusions: Patients receiving MD care are more likely to utilize important diagnostic methods for lung cancer staging including the use of PET/CT. This could lead to improved therapy and disease outcomes, especially for rural communities.
Increasing HPV Vaccination in Down-State Illinois

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Many rural/poor counties in Illinois have low HPV vaccination rates compared to Cook and other urban, northern counties. Additionally, there are challenges around changing the conversation from sex to cancer prevention, related to HPV. In May 2016, Illinois sent three representatives to a CDC-sponsored conference to address this issue.

To reach as many rural healthcare providers (HCP’s) as possible, two HPV cancer-prevention conferences took place in August 2016. Over 120 HCP’s convened from central and southern IL. AMA, nursing, and dental CE’s were available at no cost to attendees. Each conference had local, subject-matter experts, small group discussions, goal setting, and Dr Rachel Caskey, who speaks nationally about adolescent health and vaccine promotion, delivered keynote “HPV Vaccination is Cancer Prevention: Less is More”.

With mini-grants from EverThrive Illinois, three new regional coalitions have been formed to address HPV as cancer prevention in rural parts of the state. Feedback has been overwhelmingly positive. Two additional conferences have been scheduled in May 2017.

Addressing Tobacco Use Disparities in Rural Older Adults through a Mobile Phone Intervention: Project Wise

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Purpose: The purpose of this study was to test the feasibility, acceptability and preliminary efficacy of a scheduled gradual reduction (SGR) program delivered via text message paired with SMS support messages in decreasing smoking among rural older adults.

Approach: Adults over 60 years were recruited and randomized to the SGR arm (N=20, a four-week scheduled gradual reduction program delivered via text, designed to reduce smoking plus SMS support messages) or the control arm (N=20, SMS support messages). Assessments were conducted at end of program and included feasibility and acceptability measures and biochemically validated cessation via saliva samples.

Outcomes: The median age was 68, 35% were male, 58% were white, and 55% reported an income of $15,000 or less. The median number of cigarettes smoked per day was 12.0. Most (81%) reported reading all the messages they received. Participants found the intervention useful in helping them quit (SGR=53%, Control=62%) and would recommend it to a friend (SGR= 72%, Control=78%). The SGR group had a higher rate of biochemically-validated cessation (SGR=15%, Control=5%).

Conclusions: This program is feasible among rural older adult smokers and warrants further testing.

Funding: Alliance NCI Community Oncology Research Program (NCORP) Research Base grant, 1UG1CA189823
“Green is the Color of Hope”: A Community Approach to Supporting Cancer Survivors in the San Luis Valley of Colorado

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Purpose: Significant challenges to cancer follow up care coordination and communication in the rural, intermountain San Luis Valley (SLV) of Colorado exist, but the community also has significant strengths.

Approach: Boot Camp Translation (BCT) was used to partner with SLV community members to translate results of a qualitative study in the SLV into actionable themes and messages and work towards overcoming gaps in survivorship care.

Outcomes: Eleven community experts from a variety of backgrounds in the SLV comprised the SLV Cancer Survivorship Working Group (CSWG) in the SLV. Driving themes included: a) the need to empower cancer survivors to manage their needs, b) the need for a team approach, and c) the need for ongoing education. The end product was a living document that can be implemented for all survivors in the SLV from the beginning of their cancer journey. Our group continues to work together to refine this process.

Conclusions: A community of solution to address gaps in cancer follow up care in the SLV has been created and is actively working towards overcoming such gaps in care.

Urban-rural Differences in Aerobic Physical Activity, Muscle Strengthening Physical Activity, and Screen-Time Sedentary Behavior

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Many of the cancer-related deaths in rural communities may be due to differences in physical activity patterns. Existing evidence indicates that rural residents may engage in less aerobic physical activity than their urban counterparts, but there is limited literature that has examined urban-rural differences in muscle-strengthening physical activity or sedentary behavior. We investigated this gap by testing for urban-rural differences in aerobic physical activity, leisure-time muscle strengthening physical activity, and screen-time sedentary behavior in a combined dataset of the 2011-2014 iterations of the National Cancer Institute’s nationally representative Health Information National Trends Survey (N = 14,451). After adjusting for covariates, we found no evidence for an urban-rural difference in aerobic physical activity or sedentary behavior; however, we found that the mean number of weekly bouts of muscle strengthening physical activity was 21% greater for urban residents compared to rural residents (p=0.006). This finding contributes to a body of evidence indicating that physical activity patterns may differ between urban and rural residents, and suggests that resistance training may be a particularly useful behavioral target for reducing urban-rural health disparities.
A Surgical Intervention for Lung Cancer Across Healthcare Systems within a Rural and Urban Region in the US: Reach and Adoption

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Purpose: We evaluated an intervention of a surgical lymph node (LN) collection kit to increase the quality of LN examination during curative-intent lung cancer resections in a diverse mix of surgeons and institutions.

Approach: Adoption of the LN kit among institutions and physicians along with individual reach are assessed with RE-AIM in a regional cohort of 14 rural and urban hospitals in 5 contiguous Dartmouth Hospital Referral Regions.

Outcomes: 14 institutions launched in 3 waves: Wave 1 and 2 have 100% adoption; Wave 3 currently has 1 institution participating. In adopting institutions, reach of the kit is 77% (193/250 eligible patients). The 5 community/rural institutions adopted the intervention successfully. Reach appears generally representative with no substantial differences between kit and non-kit cases. 17 surgeons performed eligible surgeries during the intervention period, 94% adopted the kit using it on average for 77% of resections. Kit usage did not differ by surgeon volume (p=0.38) or hospital volume (p=0.85).

Conclusions: The LN kit can be disseminated in a regional group of hospitals from multiple systems. Currently, community/rural institutions have a higher rate of adoption than urban institutions.