

# **INTRODUCTION AND OVERVIEW THE OHIO STATE UNIVERSITY CENTER FOR POPULATION HEALTH AND HEALTH DISPARITIES (OSUCPHHD) – REDUCING CERVICAL CANCER IN APPALACHIA**

## **A. Specific Aims**

The ultimate goal of The Ohio State University Center for Population Health and Health Disparities (OSUCPHHD) is the advancement of our understanding of environmental, societal, behavioral, and biologic factors that contribute to health disparities in cancer incidence and mortality among vulnerable and underserved populations. To achieve this goal, members of this Center application propose to conduct observational and interventional research investigating a specific cancer – cervical cancer – that has extremely high incidence and mortality among women in Appalachian Ohio. The exact question this Center application addresses is – **why do Appalachian Ohio women have such high incidence and mortality rates for cervical cancer?** The Center goal will be achieved through the completion of the Specific Aims of each project, core, and funded pilot projects.

Our goal coincides with NCI priorities that include reductions in: 1) cervical cancer among disadvantaged populations; 2) health disparities; and 3) tobacco use [1]. *Healthy People 2010* objectives include improving cervical cancer screening rates, reducing tobacco use, and promoting safe sexual behavior [2]. This Center proposal addresses each of these high priority areas. Community-based participatory research (CBPR) will be used to address this question in three inter-related and interdependent projects that utilize observational or interventional designs and each focus on the multiple levels of social, environmental, behavioral, and biologic determinants of health and their mechanistic pathways.

Lastly, the Center brings together scientists from many disciplines with members of the community to address cervical cancer, thus expanding our existing relationship with community partners in Appalachian Ohio focusing on cancer prevention and control. The OSU CPPHD is composed of three projects that are supported by four identified cores and a pilot project component. These include:

**Project 1: Cervical Cancer Screening among Appalachian Populations**

**Project 2: Tobacco Use and Cessation Among Appalachian Women**

**Project 3: Correlates of HPV Infection Among Appalachian Women**

**Core A: Administrative:** Provides administrative, fiscal and management services to Center investigators.

**Core B: Biostatistics and Data Resources:** Conducts and directs statistical analyses.

**Core C: Clinical Correlative Sciences:** Catalogs, tracks, and analyzes specimens.

**Core D: Behavior Assessment and Intervention:** Collects data and assists with intervention design.

**Pilot Project Program Component:** Pilot Projects are only proposed at this time, as specified by the RFA.

## **B. Setting and Facilities**

### **B.1. Center Location**

This Center involves a team of eminent population scientists who are members of the OSU Comprehensive Cancer Center (OSUCCC) and the University of Michigan. The proposed Center is preceded by an existing record of collaboration among members of the Center and community organizations in Appalachian Ohio. The Center research will be performed in the CCC with administrative offices in Starling Loving Hall (SLH; Dr. Paskett, Center Director). Dr. Paskett, as Associate Director for Population Sciences, has unlimited access to two fully AV-equipped conference rooms where CCC and Center meetings are held; Dr. Wewers and Ahijevych occupy space in the College of Nursing which is adjacent to the CCC; Dr. Lemeshow occupies the 2<sup>nd</sup> floor of Starling Loving Hall along with the other Biostatistics Core personnel. Proximal facilities include the Tzagournis Medical Research Facility (Core C laboratory - Carson). Project operations will be conducted in all of these facilities. These facilities are adjacent to each other; this expedites frequent contact, attendance at conferences, etc. Our research site, Appalachian Ohio Communities, described in Section C, is 1- 1.5 hours away. Drs. Ruffin and Lantz, collaborators from the University of Michigan, will be on-site frequently and available by phone, fax, and e-mail.

### **B.2. Relationship of the Center to the Ohio State University Comprehensive Cancer Center**

**B.2.a. Description and Organization of the OSUCCC** The OSUCCC is currently in its 27th year as an NCI-designated CCC and with the 1999 renewal now has continued federal support through November 2004 (P30 CA16058). The OSUCCC current Director, Dr. Bloomfield, was appointed in August 1997 and since that time has initiated a series of changes aimed at creating new scientific directions and revitalizing existing clinical disciplines. The overall goal of the OSUCCC is to reduce cancer morbidity and mortality through continued basic, translational, clinical and population research. To accomplish this goal, the OSUCCC has undergone organizational, program, and faculty changes. The 211 OSUCCC members are currently served by eight shared resources that support seven Programs. The current seven programs have over \$48.3 million in annual direct costs from peer-reviewed funding, with over \$22.5 million of that

funding coming from 128 NCI-sponsored projects. The OSUCCC has substantially increased its University and philanthropic support, NCI-approved grant dollars, OSUCCC laboratory and clinical space, and published numerous peer-reviewed manuscripts demonstrating intra- and inter-programmatic collaborations. The OSUCCC leadership supports new scientific directions and revitalization of population sciences, translational, and clinical cancer research efforts. Such support should greatly strengthen the proposed Center's ability to achieve its overall goals.

**B.2.b. Cancer Control and Population Sciences Program (Electra D. Paskett, Ph.D.)** The Cancer Control and Population Sciences (CC&PS) Program was established with a focus on early detection, survivorship, and behavioral strategies related to cancer prevention and control. Specifically, three themes are the focus of this program: a) Design and implement behavioral intervention programs focused on prevention, early detection and survivorship; b) Establish bio-behavioral mechanisms (psychological, behavioral, and biologic) involved in cancer prevention and health promotion and conduct innovative studies aimed at reducing cancer risk or reducing morbidity/mortality in the community, cancer patients and survivors; and c) Conduct population-based observational studies in relation to patient-outcomes and etiologic factors. The proposed Center fits nicely within this program

**B.2.c. Structure within The Ohio State University Comprehensive Cancer Center (OSUCCC)** Dr. Paskett, PI of this Center, is Associate Director for Population Sciences of the OSUCCC and Co-Leader of the Cancer Control and Population Sciences Program (with Dr. Mary Ellen Wewers, Co-Director of this Center). As such, she is a crucial member of the OSUCCC ensuring that all programs of the OSUCCC have access to populations and data regarding the catchment area. Also, as Director of the Diversity Enhancement Program of the James Cancer Hospital and Solove Research Institute, she facilitates access to the resources of the OSUCCC for diverse populations. She attends monthly meetings of the Senior Leadership, monthly Program Leader meetings, and monthly meetings focused on Clinical Trials Accrual. Dr. Paskett chairs the monthly Cancer Control and Population Sciences meeting. As Director of the Center for Population Health and Health Disparities, Dr. Paskett will report on all scientific and administrative functions directly to Dr. Bloomfield, Director of the OSUCCC. The interface of this Center to the overall CCC is depicted in Figure 1, below.

**B.3. Interaction between the Center members and The OSUCCCC**

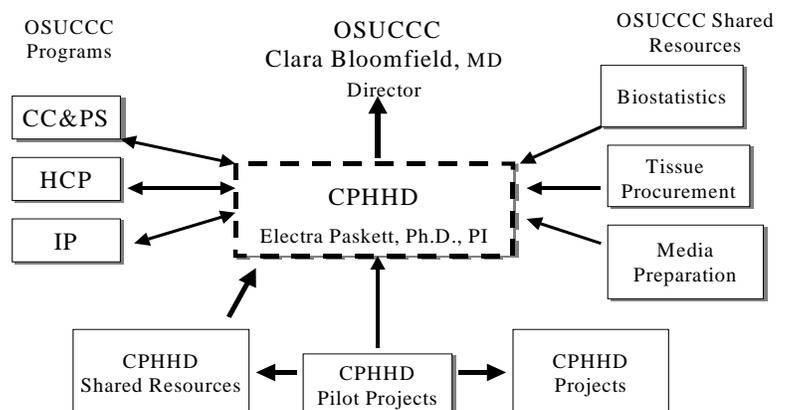
The Center members and members of the CC&PS program benefit from interactivenss with the OSUCCC. This organization – OSUCCC, CC&PS, and CPHHD – will provide a unique opportunity for population science researchers to take findings from the community back to clinical and basic science researchers, and vice versa. Evidence of the benefits of these interactions is demonstrated by the inclusion of Dr. William Carson, of the Immunology Program (IP), in this Center to assist with our biological-level outcomes, and Dr. David Cohn, of the Hormones and Cancer Program (HCP), to collaborate with Center investigators on markers of disease progression. The latter collaboration has also led to the discussion of a possible pilot project examining the effect of smoking cessation on cervical abnormalities. Our goal is to foster interdisciplinary collaboration within the Center with investigators in the CCC, the OSU, and our community partners.

**B.4. Institutional Commitment** The Ohio State University, the OSUCCC and the Arthur G. James Cancer Hospital and Richard J. Solove Research Institute have given full support to the development of this Center application and to the initiation of such a Center focusing on Population Health and Health Disparities related to cancer. Various types of institutional commitment are already ongoing for this effort and are described below. In addition, we have Letters of Support from the leaders of these units in Section F.

**B.4.a. Commitment of OSU Resources to the OSUCCC**

The University's commitment of resources to the OSUCCC is exceptional. Its past support in the creation of the freestanding James Cancer Hospital and Solove Research Institute (CHRI) and the James Cancer Research (JCH) Foundation has resulted in substantial administrative and philanthropic support for the OSUCCC. Since the 1994 renewal, over \$52.5 million have come into the OSUCCC from these sources. This support has been used to develop substantial recruitment packages, allocate discretionary funds to each OSUCCC program, develop the new CCC Clinical Trials Office, support equipment purchases, and other research and administrative uses. All philanthropic funds raised by the OSUCCC and the

Figure \_\_1\_\_. OSUCCC Participation in the CPHHD



CHRI Foundation are controlled by the OSUCCC and CHRI Directors and for the past 10 years the University has provided a 1:1 match for philanthropic funds directed to cancer research endowments.

#### **B.4.b. Commitment for Proposed Center**

**B.4.b.1. Diversity Enhancement Program** In January 2002, the OSUCCC and CHRI established a Diversity Enhancement Program (DEP) directed by Drs. Electra Paskett and William Hicks. The goals of the DEP are to 1) enhance the diversity of faculty, staff, residents, students, fellows, and patients of the James Cancer Hospital (JCH); and 2) improve the accrual of diverse populations (i.e., minority and underserved) to clinical trials (both therapeutic and non-therapeutic). The program currently has an annual budget of \$750,000 (provided by the JCH), a staff of 3 (in addition to Drs. Paskett and Hicks), and space identified off campus (in addition to Dr. Paskett's Population Science Program space and Dr. Hicks' office on campus). If the proposed Center is funded, the DEP would move under the framework and name of the Center (as it relates to the understanding of health disparities), but remain with its own specific but complementary goals.

**B.4.b.2. Population Sciences** As described above, Dr. Paskett is Associate Director for Population Sciences in the CCC. This division is concerned with facilitating the development and implementation of studies related to cancer prevention, control, treatment and surveillance within the region. The CCC and JCH contribute \$615,000 per year to support this division (for pilot funds, faculty and staff) and Dr. Paskett's program has 2,000-2,500 square feet of space allocated in the School of Public Health (SLH). These resources will also be integrated into the proposed Center.

**B.4.b.3. OSU Medical Center** The OSU Medical Center supports a Community Development Office (W. Dillard, Director) to work closely with the DEP and the CCC/JCH to promote community relations. As noted in Ms. Dillard's letter of support (see Core A), the Medical Center will provide to the Center technical support, advisement on community relations, staff time, and other items, as needed, at no cost to accomplish the Center goals. Ms. Dillard will also serve on our Internal Advisory Board, help facilitate the formation of our Consortium, and specifically work with Ohio University (a member of our Consortium) to provide mobile Pap smear screening, (as needed) to intervention clinic women, via their mobile van. Dr. David Cohn (co-investigator Project 1) will arrange for OSU Medical Center faculty to staff the van and provide services, as needed.

**B.4.b.4. State Cancer Registry** The JCH has a sub-contract with the Ohio Department of Health (ODH) to assist in analysis and reporting of data from the Ohio Cancer Incidence System (OCIS). These data, as well as cancer mortality, census, State Behavioral Risk Factor Surveillance System and Ohio Family Health Survey data will be utilized in the Data Resources portion of the Biostatistics and Data Resources Core (Core B). Two staff members from the OSU OCIS team, Drs. Moradi and Fisher, have roles in this Center; however, the time commitment needed to produce the data for this Center are partially covered by the OCIS workscope and thus, will be available to the Center at no additional cost. Examples of the value of this resource to the Center are included in this application in the form of data about Appalachia, cervical cancer, and behaviors.

**B.4.b.5. Cancer Information Services (CIS)** The Ohio State University has a sub-contract with Karmanos Cancer Center (MidWest CIS) to serve as the regional CIS office. Ms. Darla Fickle serves as regional director under the supervision of Dr. Paskett. The MidWest CIS office has directed Ms. Fickle to contribute up to 20% of her time to this Center. CIS will track calls from project interventions to them, and can provide samples of NCI educational materials for consideration for the intervention programs, if the community partners and the OSU team wish to include them (see Letter of Support from Mr. Stingel in Core A).

### **C. Patient Population**

**C.1. Appalachian Ohio** Ohio is part of the Northern region of Appalachia which contains 143 counties. Appalachia is characterized by low incomes, high unemployment, lack of urbanization, deficits in education, and poor health [3]. For example, Appalachia has higher death rates for all cancers combined compared to the United States [4]. Appalachia also has a high prevalence of risk factors for cancer, e.g. high tobacco use, and inadequate medical care [4]. Occupational exposures from the area's rich resources for industry, coal mining, foresting and wood manufacturing, could contribute to disease rates. Lastly, the geographic isolation has contributed to technology isolation, i.e., it is estimated that by 2003 only 79% of the population will have access to broadband technology [5].

Within Ohio, 29 of the total 88 counties (33%) are designated as Appalachian and includes 14,278 square miles with a population of about 1.5 million or 13% of Ohio's total population, most of whom are Caucasian [6]. Most of the 29 counties (26 or 89.7%) have poverty rates higher than the state's average of 12.5% and the region has an overall lower per capita income (\$20,516) compared to the entire state (\$27,171) [7]. About 30% of those from Appalachia Ohio have less than a high school diploma, compared to about 25% of those in Ohio's non-Appalachian counties. Over one-half of Ohio Appalachian counties have malignant neoplasm rates greater than the state, and heart disease rates are above the state's

average in more than two-thirds of Ohio's Appalachian counties [8]. Among women in these Ohio counties, death rates for lung, breast, colorectal, **cervical**, and all cancers combined are **greater** than the corresponding rates for the United States, all of Appalachia, or rural Appalachia [4]. Cervical cancer, a cancer that is almost 99% curable, if detected and treated early, is of great concern to community members and organizations within this region.

**C.2. Participating Clinics** We have identified the major health care providers in the Appalachian region of Ohio. The region includes clinics that are members of the Ohio Primary Care Association, the Ohio Department of Health and the Bureau of Primary Health Care in Ohio. Thirteen county health departments and seven other health care organizations with 24 satellite clinics have been identified as possible clinic sites in the area. Approximately 79,653 of their total patient population consists of women age 18 and older. There are approximately 20,085 Pap tests performed each year in these clinics. If funded, we will work with our community partners to select 16 sites out of the 33 identified (see Core B).

## **D. CPHHD Organization and Administration**

**D.1. Structure of Center** The Center has been carefully organized to provide all investigators with definite responsibilities and clear areas of collaboration and project interaction. The organization allows researchers to bring interesting and new ideas to the group for feedback and formulation of testable hypotheses which are then followed by pilot study design and implementation. Likewise, social scientists and faculty from numerous colleges involved have regular interaction and easy access to those involved in epidemiologic studies and community members through our community partners. This has been done to insure the dissemination of all new information, to promote collaboration among team members, to prioritize the use of resources, to maximize and foster community partnerships, and to resolve any problems that affect any team member(s). The organizational structure of the Center is illustrated in Figure 1 in Core A.

### **D.2. Senior Leadership**

**D.2.a. Electra D. Paskett, Ph.D.** Dr. Paskett received a Masters degree in Public Health in Epidemiology from the University of Utah and a doctorate in Epidemiology and health services research from the University of Washington. Dr. Paskett's research has focused on cancer prevention and control, mainly in studies conducted among women. Her doctoral research focused on understanding why women with abnormal Pap smears fail to return for appropriate follow-up treatment, developing a behaviorally-based intervention to improve adherence, and then testing the efficacy of the intervention in a randomized controlled trial [10,11]. Upon joining the faculty at Wake Forest University School of Medicine (WFUSM), Dr. Paskett conducted a Phase IV study in 6 clinics to examine the effectiveness of this intervention [12]. She also served as Co-Investigator of an NCI-funded study which began in 1992 to improve breast and cervical cancer screening among low-income, minority women (FoCaS #CA7016) [14]. She co-authored a manuscript with Dr. Paula Lantz (University of Michigan, co-investigator) related to baseline characteristics of women at 6 sites funded under this RFA [13]. Community-based participatory research was utilized in this study, as well as two subsequent studies that Dr. Paskett is Principal Investigator of – one in a low-income tri-ethnic, rural community (R01 #CA72022) and the second among low-income women in 11 communities in North and South Carolina (ACS #T10G-99-361-02-CPC). She has also served as Co-Investigator on three studies while at WFUSM that focused on improving cancer screening behaviors among rural, including Appalachian, populations. She is a part of the Cancer Collaborative sponsored by the Bureau of Primary Care. Dr. Paskett will serve as Director of the Center and Principal Investigator of Project 1.

**D.2.b. Mary Ellen Wewers, Ph.D., M.P.H.** Dr. Wewers received a doctorate in nursing from the University of Maryland in Baltimore and master's of public health from Harvard University School of Public Health. She is an Adult Nurse Practitioner and has maintained tobacco-related NIH funding since 1988, first with a KO8 award that included training in laboratory-based techniques necessary to measure nicotine and cotinine in bodily fluids. Dr. Wewers currently serves as Principal Investigator on two R01 grants (R01 NR04121 and R01 DE13926). The projects investigate nicotine dependence among underserved groups of tobacco users residing in rural Ohio Appalachia and test a nurse-managed lay educator model of cessation that involve partnerships with community health departments and Ohio Extension rural county agents. She now serves as Cancer Control and Population Sciences Program Co-Leader at OSU Comprehensive Cancer Center with Dr. Paskett. Dr. Wewers is the director of the doctoral program in the College of Nursing and Co-Director, with Dr. Ahijevych, of the College's Nursing Center for Tobacco Intervention. In addition, Dr. Wewers is a member of the University's Council on Research and Graduate Studies. Dr. Wewers serves as Co-Director of this Center, Principal Investigator of Project 2, and will conduct cotinine analyses within Core C.

**D.2.c. Mack Ruffin, M.D., M.P.H.** Dr. Mack Ruffin is Board Certified in Family Practice with a Masters degree in Public Health (Epidemiology). He is an Associate Professor in the Department of Family Medicine at the University of Michigan. He has a joint appointment in the Department of Epidemiology in the School of Public Health at the University of Michigan and is a member of the University of Michigan Comprehensive Cancer Center. He has published numerous articles related to cervical intraepithelial neoplasia, nutrition and cancer chemoprevention. In addition, he has been

actively involved in several multi-centered clinical trials and developed a research network. Dr. Ruffin's research has been focused in human papillomavirus (HPV) and cervical disease for the past 10 years. He has led multidisciplinary teams addressing a number of issues in this area which include 1) collection techniques [15,16], 2) detection of HPV by different methods [17], 3) factors associated with HPV infections [18], 4) the relationship of cervical micronutrients to HPV infections [19], 5) the psychosexual impact of the diagnosis of HPV [20], 6) the impact of topical retinoids on several potential surrogate endpoint biomarkers, and 7) the impact of dietary interventions on treating cervical intraepithelial neoplasia and potential surrogate endpoint biomarkers. He has also written peer reviewed articles on the issues related to cervical cancer prevention [21-23]. Dr. Ruffin is the Principal Investigator of Project 3.

**D.2.d. Stanley Lemeshow, Ph.D.** Dr. Lemeshow is a professor in both the Department of Statistics in the College of Mathematical and Physical Sciences and the Department of Epidemiology and Biometrics in the School of Public Health and serves as Director of both the OSU Center for Biostatistics and the OSU Comprehensive Cancer Center's (CCC) Biostatistics Core. He has over 25 years experience in research in biopharmaceuticals, public health and epidemiology and is recognized internationally for his contributions to the fields of logistic regression, sample survey methods and survival analysis. He was elected a Fellow of the American Statistical Association in 1995. Dr. Lemeshow's texts, Applied Logistic Regression (with D. Hosmer), Sampling of Populations (with P. Levy), Applied Survival Analysis (with D. Hosmer), and Adequacy of Sample Size in Health Studies (with D. Hosmer, J. Klar, and S.K. Lwanga), are widely used by researchers in a wide variety of disciplines. Dr. Lemeshow has served as a visiting faculty member and has taught numerous short courses on logistic regression, sampling and experimental design in the United States, Europe and Australia. Dr. Lemeshow is Director of Core B.

**D.2.e. William E. Carson, III, M.D.** Dr. Carson is an Assistant Professor of Surgery within the Division of Surgical Oncology at The Ohio State University Comprehensive Cancer Center (OSUCCC). Dr. Carson has been a member of the OSUCCC since 1997 and has extensive experience in the design and conduct of phase I and II clinical trials in the treatment of cancer. Dr. Carson has overseen the development and implementation of extensive correlative studies in each of his ongoing clinical trials. Dr. Carson will oversee all aspects of the Clinical Correlative Sciences Core C that will provide services in support of the correlative laboratory studies being performed for the Center.

**D.2.f. Karen Ahijevych, Ph.D.** Dr. Ahijevych, College of Nursing Honors Program Director, is nationally recognized as an expert in nicotine dependence and has conducted NIH funded research (DA10809 "Biobehavioral Nicotine Dependence in Black Women") examining biological and behavioral aspects of nicotine dependence with particular focus on African American and white women, adolescents and college students. Dr. Ahijevych, a native Appalachian resident, serves as co-investigator on two R01 studies of Mary Ellen Wewers (R01 NR04121 and R01 DE13926), with whom she has collaborated since 1989. In these studies in Appalachia, she has assisted with focus groups in two different counties regarding cultural beliefs about tobacco use and cessation. She is first author of an in-press manuscript presenting focus group analysis of beliefs and attitudes regarding tobacco use and cessation in Appalachia. Dr. Ahijevych has assisted in designing and implementing the training of lay educators to conduct data collection via laptop computer and to deliver a stage-specific tobacco cessation intervention with pharmacotherapy to Appalachian tobacco users. In addition, she conducted focus groups with African American women [24] and college students who were cigarette smokers in the process of designing culturally sensitive tobacco cessation interventions for different projects. Dr. Ahijevych is Director of Core D and Co-Investigator on Project 2.

In summary, the elements and structure of this Center, as well as the recognition that the Center consists of members who have the appropriate experience and relationship with the community as well as previous interactions. This provides the basis for an effective Center.