Published in final edited form as:

J Health Care Poor Underserved. 2012 November ; 23(4): 1806–1824. doi:10.1353/hpu.2012.0155.

A Model for Bidirectional Community-Academic Engagement (CAE): Overview of Partnered Research, Capacity Enhancement, Systems Transformation, and Public Trust in Research

Claudia R. Baquet, MD, MPH

Associate Dean Policy and Planning, Professor Medicine, University of Maryland School of Medicine

Abstract

The University of Maryland's Office of Policy and Planning in collaboration with urban and rural community partners, planned and implemented a model for community-academic engagement (CAE) in partnered research and programs. The model addressed health disparities, cancer and tobacco-related diseases, and public trust in research. Environments have flourished that resulted in bidirectional community-academic interactions, and led to transformation of the academic environment and community capacity to identify and address health issues. This collaborative model produced:

- enhanced public trust in research; and
- enhanced community and Academic Health center (AHC) capacity to address community health needs as partners.

A unique feature of this model is AHC's shared grant funding with community partners serving diverse and medically underserved communities for predetermined roles in research, policy and educational programs. Over \$18 million in grant funding was provided to community organizations. This paper presents an overview of this model as a case study.

Keywords

Community engagement; partnered research; bidirectional community-academic partnerships; public trust in research

Unprecedented national attention has demonstrated the value and need for meaningful community-academic partnerships.^{1,2,3,4} Federal and private sector investments in community partnered research and community-academic engagement (CAE) have resulted in heightened appreciation and support for the role of communities in research, education, health policy and advocacy. Programs which supported development and maintenance of long-lasting, bidirectional partnerships between academia and communities are the

Corresponding Author: Claudia R. Baquet, MD MPH, University of Maryland School of Medicine, 10 South Pine Street Suite 261, Baltimore, Maryland 21201.

Disclosure Statement: The contents of the article are solely the responsibility of the author and do not necessarily represent the views of the funding agency

centerpiece of a wide variety of programs designed to accelerate research and translation of medical and public health advances.⁵ One of our primary goals in this model was to increase community and AHC capacity to foster greater willingness to participate in clinical trials, addressing complex health issues in clinical medicine, public health and health disparities especially for diverse, underserved and rural populations.

Methods

This paper is a case study of a community-academic engagement (CAE) model in Maryland, developed in partnership with a variety of community-based stakeholders, the Office of Policy and Planning (OPP) and the Center for Health Policy/Health Services Research Organized Research Center (ORC) at the University of Maryland Baltimore, the state Academic Health Center (AHC) and the University of Maryland School of Medicine. The model was developed in response to community organization and academic leadership in OPP which identified health status and health care needs, and expressed the mutual desire to establish the foundation for long term bidirectional partnerships and interactions. The process demonstrated that bidirectional partnerships are effective for addressing public health problems through research, education and outreach, training and policy research.

Communities are defined as individuals, organizations and other stakeholders external to academia that identify themselves based on any number of shared factors such as geography, culture, race/ethnicity. Partners include individuals and community-based organizations, community physicians, nurses and other health care professionals, Historically Black Colleges and Universities (HBCUs), Area Health Education Centers (AHECs), community hospitals, faith based organizations, community newspapers, school systems, local health departments, community health centers, elected officials and their staffs and others. A combination of community outreach and theory based community engagement or empowerment are recognized as necessary to promote partnered research, research translation, and develop community-participatory guided strategies to address health issues, including health disparities.

The Office of Policy and Planning (OPP) in the University of Maryland School of Medicine (UMSOM), starting in 1994, designed with community participation, an engagement model to address health issues across the state. This CAE model would broaden the scope of research, research translation and application in an AHC and strengthen community capacity to address health issues. Community engagement was operationalized through formal and informal community-academic partnerships that were rooted in mutual trust, respect, benefit, and specified roles for each of the partners. Through strategically designed and grant supported statewide and regional infrastructures, this Office and the partners cultivated bidirectional interactions to increase cancer disparities and tobacco related illness research, policy research and advocacy, and public trust in research in urban and rural areas of the state. The model also cultivated respect for and recognition of both the community's and AHC's expertise. Bidirectional means that communication flowed in both directions and all partners had some share of ownership, decision-making, monitoring and revision, and promotion of this model. The model's research components initially focused on clinical trials, community education and partnered community-based research. Over the ensuing

decade, the research aspects of the model evolved as a result of community interests, to include research across the continuum and biospecimen donation.

Maryland

Maryland is a state with 24 jurisdictions, 23 counties and Baltimore City, and covers over 12, 400 square miles and a land mass of over 9,700 square miles.⁶ Maryland's population in 2010 was 5,773,552. The state population is diverse, with 54.4% non Hispanic white, 30% African American, 8.4% Hispanic or Latino origin, 5.8% Asian, less than 1% American Indian and Alaska Native (0.5%) and Native Hawaiian and Other Pacific Islander (0.1%), and 2.5% persons reporting two or more races.⁶ Racial/ethnic and geographic disparities in health occur for a number of chronic and preventable illnesses, and the reader is referred to additional information.⁷ The total civilian population residing in rural Maryland is over 430,000 and this population is characterized by high poverty and uninsured rates, lack of transportation and infrastructure barriers to healthcare and high chronic disease rates. Some rural counties are total or partial rural designation depending on the federal or state criteria that is applied. And there are high areas of health professions shortages just as there are in urban parts of Maryland.

History

Seeking solutions to complex health issues and inequities in health necessitated the development of multidisciplinary and multi-level approaches. Planning efforts led to community-partnered research, partnered grant applications and outreach programs which addressed social determinants of health, tobacco related diseases, health care policy and advocacy.^{8, 9}

Funding from the National Cancer Institute (NCI) supported the development of two infrastructures, the Maryland Special Populations Cancer Network (MSPN 2000-2006) and the Maryland Regional Community Network Program (2005-present).⁹ Each laid the foundation for the model's bidirectional partnerships with a primary focus on cancer health disparities. Grants from the Maryland Cigarette Restitution Fund Program (CRF; 2000-2009) provided critical resources to develop and expand disease focus to support a community-based statewide infrastructure called the "Maryland Statewide Health Network" which addressed cancer and other tobacco related diseases. The common thread for these separately funded and focused programs was community-based infrastructure development, community capacity enhancement and sustainability, and bidirectional partnerships. The structure, development process and selected programs of this CAE model are described below.

Results

The Model

Theoretical foundations for this model were the socio-ecologic framework, which views illness and contributing factors for a number of diseases such as chronic diseases as resulting from complex, multilevel social, environmental, individual, community and systems, policy related factors and Empowerment Theory.¹⁰ The complexity of these health issues and

socio-environmental factors necessitate focusing on determinants of health at multiple levels to promote prevention, early intervention and sustainability, and improved health especially among underserved, rural and urban residents. Community empowerment development was critical for local adoption of programs and for sustainability. Guiding principles include respect and mutual benefit for the bidirectional interactions between community stakeholders and faculty/staff at an academic health center (AHC), centralized program and administrative management, ongoing staff/community partner and faculty planning, training, evaluation and monitoring to assure quality programs to foster partnered research, research translation and increased community capacity enhancement. FIGURE 1 presents the components of the model.

Structural domains of the Model

Administrative infrastructure—The central administration at the AHC provided the “structural “home and context for program and research interactions between regional community organizations, leaders, faculty, and staff. Regional community offices provided local access to community outreach and education expertise and resources. Both supported community interactions, health and resource needs assessments, research and program evaluation, partnered grant applications integration of program initiatives, and sustainability of the infrastructure.

A programmatic and administrative plan was developed in 1999 which established a roadmap for identifying and addressing health status, healthcare, socio-ecological resources and needs in Maryland. A central office, regional partners and offices in urban and rural areas across the state provided opportunities to establish partnerships by engaging community partners at various levels.

Regional partners and offices—The establishment of a statewide infrastructure with urban and rural presence and partnerships resulted from resources provided initially through the MSPN^{9,11} specifically for cancer disparities, training and education (NCI no: 5U01CA86249). Later, the Maryland Tobacco Settlement Program (CRF) funds supported implementation of tobacco related diseases education and outreach. Staffed by employees of community organizations such as AHECs or University employees hired from local communities, the regional offices were equipped with videoconferencing technologies for meetings, clinical and community research discussions, education and training. Linkages supported educational programs on screening guidelines, updates on best practices in prevention, screening and clinical medicine and physician and nurse continuing education programs for community-based health care professionals and local residents. Videoconferencing units were donated, maintained, and supported by the medical school in rural Area Health Education Centers (AHECs), community health centers, Historically Black Colleges and Universities (HBCUs), and community hospitals.^{8,11}

Partnerships—Both formal and informal partnerships were developed to operationalize this model. The types of partnerships, the nature of the interaction and the grant source are provided in TABLE 1. Formal partnerships were implemented through memoranda of understanding (MOUs), which detailed the framework for interactions between each

community partner and the AHC faculty and staff. MOUs specified roles for each partner, how shared grant funds would be spent and managed to achieve programmatic and research goals. Supporting community partnerships through formal MOUs necessitates development of systems in the AHC to disburse grant funds in a timely manner to organizations with limited cash reserves. All partners were required to maintain active human subjects' protections training and HIPAA certificates and were also trained in federal grants management, invoicing and reporting.

The Office of Policy and Planning provided ongoing technical assistance on NIH grant writing, program evaluation, communicating research results to the public and updates on advances in discovery, clinical trials and public health. Community partners provided technical guidance to academic faculty and staff on community based research etiquette, historical community relationships with academia, community expertise, leadership, and community identified needs or resources. Partners included: community organizations, Historically Black Colleges and Universities (UMES, Bowie State University (BSU) and the affiliated Maryland Center at BSU, Coppin State University (CSU), Area Health Education Centers, African American community newspapers, local health care professionals, community hospitals, state and local public health departments, community health centers, faith-based organizations, senior housing centers (HUD) and day centers, local media, schools, elected officials and their staffs and others. Partnerships provided the foundation for long term community-academic engagement.^{9,11} This collaborative approach provided community partners' ownership, decision-making on priority issues, and involvement in program and research planning, program monitoring, implementation and evaluation. Active community engagement in the partnered research and program development led to enhanced public trust in research, increased health and research literacy, improved AHC credibility, increased availability of community based studies and participation in clinical trials. With communities as partners in assessing local needs, developing interventions, and participating in evaluations, the academic partner evolved in its recognition of community strengths, values and incorporated the community in meaningful research planning and execution. The AHC developed greater appreciation and embraced community values and customs resulting in community-appropriate and culturally sensitive methods for development and assessment of programs and modifications as the model evolved. Direct involvement in these activities led to increased skills development and capacity of the community partners, led to successful grassroots grant writing, useful health promotion program evaluation, greater local leadership and advocacy, and sustained partnerships lasting beyond the grant performance period.

Leveraging resources for sustainability—Maintaining funding to support and expand this CAE model was essential. Constant grant submissions were required to private, state and federal funding agencies. Sharing funds from University grants for specific predetermined community roles on research, educational and health professions and public health grants was critical for demonstrating respect for community strengths, building trust, and validating our commitment to engagement beyond CBPR. These actions led to AHC and community partner transformation as listed in TABLE 2. Active, grant supported community participation in NIH funded research fostered increased capacity development in the

community partners. A serendipitous outcome of enhanced grant participation was that community organizations submitted their own grant applications to support new community research and programs. Community partners were awarded grants over \$2 million in grants from agencies including: the Maryland Affiliate of Susan B. Komen Race for the Cure, HHS, NIH, HRSA, DHMH, the state health department program.**

Sharing significant grant funds and non-monetary resources such as technical assistance with community partners is a unique and mandatory component of this model. The provision of grant funds to community partners demonstrated the respect and value that the AHC placed on the expertise and contributions of the community and its organizations and leaders. Financial resources provided support to community-based organizations for specific roles in NIH cancer and health disparities research and foundation grants and led to increased organizational and regional capacity to identify and address local health issues. Grant funds supported community participation in quantitative and qualitative research studies and outreach/recruitment for specific clinical trials, speakers for community educational programs, technical assistance and collaboration for events with community partners. This demonstrated respect and recognition of community expertise, thus enhancing the value of community partner contributions. Over \$18 million of the OPP grant funds were awarded to community organizations through formal university sub-contracts for specific roles on partnered research, education and training and community outreach grants.

Multidisciplinary research—During the nascent years of this model, the focus was on clinical and community-based research. Ongoing training and community skills enhancement led to greater community organization interest in serving as part of research teams. Engaging communities in mixed methods research, enriched the relevance of the research, incorporated community participation in specific research roles, and supported the dissemination of research results.¹² Community roles increased as clinical trial educators, screeners and recruiters for specific available clinical trials, handling study logistics for focus group recruitment and implementation, serving as community health workers in cancer screening studies, and participating in the informed consent and protocol adherence process for studies.

As the model and relationships matured, community interests broadened to include investigations on family history and cancer risk assessment, biospecimen and tissue donation, and preclinical research. To catalyze the growing public trust in research, a rigorous statewide rural and urban community-based 4-5 week educational course was developed that focused on removing the mystery and stigma often associated with research, bioethics and research ethics, clinical trials and tissue donation. This shift to incorporate the community's research interests was consistent with the AHC's research, education and community service missions.

Science-guided policy, policy research, and community advocacy—Health related policy research and advocacy focused on health care workforce distribution and rural health, indoor clean air act, health disparities, breast, colorectal and prostate cancer, healthcare access barriers, telemedicine, mandated insurance benefits, and diagnostic and treatment services. Potential policy solutions to these issues were addressed with state and

federal elected officials, their staffs and their constituents. Guidance for implementing policy and community advocacy initiatives was established to inform efforts to define specific geographic health disparities and determinants of these disparities in rural and urban regions of the state. The model also supported ongoing technical assistance to elected officials and their staffs, and development of tools to monitor health needs, regulatory or legislative policy actions and health disparities in constituent communities.^{9,11}

Diversity in clinical trials participation—The lack of sufficient diversity in clinical research and clinical trials participation, the barriers to participation and retention of African Americans, other minorities, rural and uninsured patients in clinical trials impede advancements in medicine and public health.^{11,13,14,15,16}

As a national concern, federal and state legislation and community-based clinical trial programs have begun addressing aspects of adult minority and rural community participation in research, especially for cancer.^{11,13,14,15,16} With an emphasis on community engagement in research and research translation, our public trust in research programs focused on increasing the public's willingness to participate in research, increasing primary care physician willingness to refer patients to clinical trials and increasing the availability of cancer clinical trials in minority and rural communities. Other programs were web based human subjects' protections and HIPAA training for the general public; continuing education programs for community health care professionals; and support for community-based trial infrastructure support. These programs were developed in partnership with a community oncology practice and rural hospital, community physicians, community health centers, faith-based and community organizations statewide.

Program evaluation and research—A comprehensive evaluation research and monitoring system was designed to assess this model. Evaluation questions, defined by the full partnership, focused on program processes and outcomes. Using a socio-ecological framework for shaping the evaluation, mixed-methods studies were implemented to assess community awareness and knowledge resulting from educational interventions, health professional continuing education programs, partnership development, community engagement, infrastructure development, and policy development activities.¹⁷ Social epidemiological studies addressed social contextual and environmental factors of health disparities. As this model addresses complex and multilevel factors and partners, the need for long term evaluation research strategies was essential.¹⁸

Quasi-experimental designs (pre-post and nonequivalent comparison group), surveys, secondary data analyses, and qualitative methods were used to address evaluation questions. Findings informed decisions related to program, performance, reframing, community capacity, collaboration, and contributing factors.

State tobacco settlement supported programs

The Maryland Cigarette Restitution Fund (CRF) Program was an important financial resource for development, expansion and sustainability of features of this model. One of the signature programs at the AHC was the University of Maryland Statewide Health Network (UMSHN) in the OPP. This was the state supported infrastructure from which many of the

bidirectional partnerships' prevention and control activities, not limited to cancer, were launched. The goals were to: (1) expand UM's efforts to promote screening, early detection, follow up and prompt treatment for cancer and tobacco related diseases; (2) help reduce morbidity and mortality from targeted diseases; and (3) reduce disparities in cancer deaths for underserved minorities and rural communities. The Network developed programs that increased community knowledge, action, and self-sufficiency on clinical trials informed decision-making, public trust in research and biorepository donation from diverse populations. Other programs were: community based clinical trial education, oral health and tobacco use cessation education, health professional continuing education on cancer screening guidelines, prevention and peripheral arterial disease (PAD) screening, community health education programs using evidence-based resources, and facilitated faculty-community outreach related to health disparity research.

A second CRF grant funded at UM was the Other Tobacco Related Diseases Research (OTRD) grant which supported recruitment of faculty to the UMSOM, funds for the GCRC infrastructure, and a successful faculty small pilot grant research program which funded over 80 faculty small grants over an 8-year period. This led to leveraging of federal grants in the areas of health services research, clinical and translational research on tobacco related diseases other than cancer. A rural home telehealth pilot program with Garrett County Health Department in rural western Maryland was also supported to evaluate the feasibility of chronic disease management of home health patients with Congestive Heart Failure, Hypertension, Diabetes Mellitus, Chronic Obstructive Pulmonary Disease. Support for the site expansion and evaluation of the mobile pediatric specialty asthma unit, the Breathmobile, was also a priority for funding.

Discussion

Program accomplishments

Significant accomplishments of this model included: sustained partnerships, leveraged grant funding, evidence-guided policy development, community grant funding, enhanced community knowledge, increased willingness of the public to participate in trials and increased willingness among primary care physicians to refer patients to clinical trials, increased cancer trial availability in rural communities, and increased accrual of rural cancer patients and communities in cancer clinical trials. Achievements described here illustrate the value of this model and its contribution to the success of community-academic collaborations to advance clinical and health disparities research within the research continuum. Recognition of this model by NIH and others led to several presentations and formal training of NIH grantees across the US and NIH extramural staff including NIH supported CTSA's. Community partners served as co presenters at some of these programs.⁵ Requests for training by elected officials or their staffs across the U.S. on the policy research aspects of the model and partnered research was facilitated through relationships that a Maryland Senator had with his peers in other 15 states such as the Southern Legislative Conference.

Transformation of an Academic Health Center

The combination of partnerships with community organizations and leaders, programs, research studies, public health and community initiatives helped to transform the academic health center resulting in increased faculty and student bidirectional community engagement and capacity, UMB and UMSOM faculty participation in bidirectional community partnerships, expanded the research portfolios that incorporated community participation, health disparities research, education, training and outreach. Most notable were research and community outreach collaborations between the Schools of Pharmacy, Social Work and School of Medicine faculty, and Maryland HBCUs on NIH supported cancer and health disparities research grants.

Initiating transformation within the AHC led to: increased medical school, campus wide and faculty and student interest and participation in research literacy programs, health disparities research, outreach and partnered research, community engagement; increased incorporation of health disparities hypotheses into proposed research across the continuum, and greater appreciation for the strengths of communities in identifying and providing solutions to local health problems.

HHS designated National Best Practice on Community-based Cancer Clinical Trials

Our community-based cancer clinical trials program on cancer coupled with clinical trial education and awareness programs increased public and community health professionals' understanding of the value of clinical research and community based clinical trials in advancing health. The partnership between the Office of Policy and Planning at UMSOM with a community oncology practice and community hospital on Maryland's rural Eastern Shore resulted in increased availability of cancer trials and rural patient enrollment. Both significant increases in the number of cancer trials available as well as the number of rural cancer patients' enrolled in cancer trials resulted. This program's success was attributed to local community oncology clinician leadership and credibility, academic research expertise and experience, ongoing grant support for trial infrastructure, community commitment to health improvement which incorporates clinical trials, shared benefits and commitments to the partnership, and clinical trials community and health professionals educational initiatives.¹⁶

Promoting health and research literacy

Another important component of community education and training programs focused on fostering public trust in research also development of "research literacy" in the public. Research literacy aims to remove the mystery and stigma often associated with research and researchers by teaching the public and community physicians, nurses, social workers, the basics of research design, taking results of research to the community and clinical practice or research translation, bioethics and research ethics and the relationships of these to health disparities and barriers to research participation in urban and rural communities. This quickly became a very popular and sought after part of the model by organizations across the U.S. A 4-week course on bioethics, research ethics, clinical trials and health disparities called "Bioethics Mini Medical School" provided structured education for community based health care professionals and the general public on bioethics, research ethics, clinical trials

and health disparities. This program was free and was tailored from a “regular” 5 week Mini Med Program that started 12 years ago by the School of Medicine. These programs were essential for fostering health and research literacy, research translation, statewide clinical trial education, and understanding of social determinants of health such as the role of housing, geography, employment, and education on health. The program contributed to building public trust in research and increasing “research literacy” -- particularly in medically underserved communities. Opportunities were provided for community web-based training on the Health Insurance Portability and Accountability Act (HIPAA) and human subjects training (conducted through the University of Maryland School of Medicine’s Human Research Protections Office (HRPO). HIPAA and human subjects’ protections trainings were mandatory for all community partners and associated employees. Providing these programs and human subjects’ certificates helped to remove the mystery and stigma attributed to research and researchers.

The University has directed the Maryland AHEC Program for over 36 years, is administered by the School of Medicine Office of Policy and Planning. Two rural AHEC centers on the Eastern Shore and in Western Maryland and one center in Baltimore City provided local credibility and access to large numbers of community-based health professionals (physicians, nurses, pharmacists, social workers, and others) for the model’s continuing education (CE) programs. Continuing education programs were a tool to disseminate research results and discuss advances in clinical management. The AHECs served as the vital component of community-based education and training of health professions students across the AHC campus and University System. AHECs are also vital for promotion of health careers opportunities and research careers for underserved youth K-12.

“Train-the-trainer” programs were developed by community partners who were educators and a nursing program at a local community college in rural Southern Maryland. This program educated residents on health issues of specific interest to this region such as oral health and cancer screening. Community Health Workers (CHWs) were employed from Baltimore City and rural regions and were trained in research methods to navigate of age eligible rural and urban African Americans in studies on breast and colorectal cancer screening.

Enhanced community capacity and community empowerment

Enhancing community capacity required strategically planned programs that provided health information, training, updates on research results/clinical guidelines, grant writing and grant management skills, expertise and technical assistance readily available to local health care professionals and community residents.

Videoconferencing linkages provided community partners’ access to national resources such as NIH, NCI, CDC, HHS web casts on health disparities, release of the National Health Disparities (AHRQ) and other federal reports, and UMSOM clinical/educational programs to community hospitals, clinicians in FQHCs/CHCs, and the general public.

Informed policy strategies

Significant policy successes were tied to efforts at the state, local and federal levels through policy education and research, and community advocacy. As community capacity increased, local organizations systematically served as advocates to address health disparities, workforce distribution, provider reimbursement, physician and nurse loan repayment needs, and health care access issues. Examples of advocacy efforts for policy development were: (1) community partner engagement in passing the smoke free Maryland legislation, (2) doubling the state tobacco tax, and (3) increased financial support for cancer screening and treatment. (4) Pilot prostate cancer education program for rural Southern Maryland men through the Charles County health department. As policy research matured, policy fellows from across the US requested short term rotations and training on these methods at UM.

Leveraging resources

This significant investment validated and affirmed the trust, recognition, and respect of the AHC for the partnership organizations and the communities they serve.

Sustainability and expansion of the programs

Sustained bidirectional partnerships were established with an extensive number of community organizations and leaders. Long-term programmatic initiatives, expanded community capacity, empowered communities and the AHC appreciation for community roles and strengths in partnered research and outreach. The Office of Policy and Planning leveraged this model to obtain additional resources for infrastructure development and expansion, community education and outreach, and multidisciplinary and partnered health disparities research and translation.

Conclusion

This case study demonstrates how communities and academic health centers can foster and participate in reciprocal collaborations through infrastructure development, partnered research, and community and health professional education. Telehealth and use of technology, policy research and enlightened advocacy, leveraged funding for sustainability, public trust in research and clinical trials availability and participation are important in this model. Increased public trust in research resulted as well as heightened community research literacy, and enhanced community capacity and empowerment.

The lessons learned and important challenges that emerged in developing this model are numerous. These included: (1) the need to maintain funding required constant grant writing/submission; (2) challenges can emerge in managing grants from differing grant requirements of public health agencies compared to federal research or healthcare access agencies; (3) ongoing need to demonstrate benefits and formal rewards of community engagement in an academic environment; and (4) time consuming tasks of building and maintaining trust among multiple stakeholders who historically distrust AHCs because of legitimate community concerns or history such as academic “helicopter” research. (5) Providing grant funds to organizations from the AHC, necessitates timely payment systems in the AHC that are responsive to invoicing from small community organizations with limited cash reserves.

Future Directions

The urgent need exists to accelerate clinical and public health advances through research and research translation. Fortunately, there is increasing recognition of the importance of community engagement, bidirectional partnerships, partnered research, and outreach in support of clinical and public health advances. This Maryland model for community-academic engagement and bidirectional partnerships demonstrates a viable and rewarding approach to address complex issues in health, research translation and participation in clinical trials. Building a bidirectional partnership model instilled public trust in research and academia, and improved both the community and AHC capacity. The model and its programs promote community capacity enhancement and empowerment and strengthen the abilities of AHCs and communities to address the health concerns of residents. This requires long lasting academic-community interactions that are reciprocal with mutual respect for all partners, shared resources, and funding streams for infrastructure, research staffing and programmatic support. This model requires a “culture change” in the AHC that should share grant resources with community partners for legitimate, predefined and specific research and educational roles. Transformation goes beyond placing community members on volunteer committees or advisory boards to awarding grants to community agencies to strengthen programs, enhance research and performance, build trust and enhance capacity. This model demonstrates long term bidirectional relationships built upon mutual respect and acknowledgement of the varied but equal value and worth of academia and community. This is critically important for advancing research, medicine and public health, translating research into clinical and policy advances, and assuring sustainability of partnerships. Transformation of both the AHC and communities is a rewarding and significant benefit of this model. With some tailoring, this model is replicable in other geographic locations, for a variety of communities and AHCs.

Acknowledgments

The work reported in this document was the result of extensive community partnerships, input and was supported by various funding sources including: the following: the Maryland Special Populations Cancer Research Network (NCI:U01CA86249); the Community Networks Program (NCI:U01 CA114650-01); and the Maryland Cigarette Restitution Fund Program of the State Health Department (CH 725 CRF). Funding from NIMHD/NIH for the Bioethics Research Infrastructure (NIMHD/NIH: RC2MD004761); P 60 Comprehensive Health Disparities Research, Training and Outreach Center (NCHMD/NIH MD000532); Minority Serving Institution Cancer Center Partnership NCI U56 CA096303; Social Determinants of Health Rural Telehealth (NIMHD/NIH RC2MD004800); Community Health Educator-Biospecimen/Biobank Supplement (U01CA114650-05S4) is also acknowledged. The author would also like to acknowledge the Maryland General Assembly and the Maryland Governor’s Office, and the Department of Health and Mental Hygiene for significant funding through the Maryland Cigarette Restitution Fund Program. The author acknowledges community partners including: Baltimore Times Newspapers and Community Foundation, Eastern Shore AHEC and Western Maryland AHEC, Bel Alton Community Development Corporation, the Maryland Center at Bowie State University (BSU) and BSU, University of Maryland Eastern Shore, Eastern Shore Cancer Research Network, Shore Health System, Garrett County Home Health Agency and Health Officer and Staff, Ministerial Alliances, Chesapeake Potomac Home Health Agency, community health centers and local health departments. The Vice President for Medical Affairs UMB and Dean of UMSOM who served as the chair of the University of Maryland Medical Group (UMMG) Oversight Tobacco Settlement Committee, the external Program and Technical Review Board (PTRB) and the participating faculty and staff of UMB are also acknowledged.

References

1. Jones L, Wells K. Strategies for academic and clinician engagement in community-participatory partnered research. JAMA. 2007; 297:407–410. [PubMed: 17244838]

2. Moreno G, Rodríguez MA, Lopez GA, et al. Eight years of building community partnerships and trust: The UCLA Family Medicine community-based participatory research experience. *Academic Medicine*. 2009 Oct; 84(10):1426–33. [PubMed: 19881437]
3. Michener JL, Champagne MT, Yaggy D, et al. Making a home in the community for the academic medical center. *Academic Medicine*. 2005 Jan; 80(1):57–61. [PubMed: 15618094]
4. The Clinical and Translational Science Award (CTSA) Consortium's Community Engagement Key Function Committee and the CTSA Community Engagement Workshop Planning Committee. Researchers and their communities: The challenge of meaningful community engagement. http://www.ctsaweb.org/uploadedfiles/Best%20Practices%20in%20Community%20Engagement_Summary_2007-08.pdf
5. National Institutes of Health. Meeting summary: Improving health with communities: The role of community engagement in clinical and translational research; Natcher Conference Center; May 14–15; 2009.
6. US Census Bureau. State and County QuickFacts. Data derived from Population Estimates, Census of Population and Housing, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report. <http://quickfacts.census.gov/qfd/states/24000.html>
7. Maryland Department of Health and Mental Hygiene. Maryland Plan to Eliminate Minority Health Disparities Plan of Action 2010 – 2014. Maryland Office of Minority Health and Health Disparities; Mar. 2010
8. Baquet CR, Bezuneh M, Novicky M, et al. Addressing health disparities through community-academic partnerships: The Maryland model. *National AHEC Bulletin*. 2005 Spring-Summer;21(2): 47–49.
9. Baquet CR, Mack KM, Bramble J, et al. Maryland's Special Population Cancer Network: Cancer health disparities reduction model. *Journal of Health Care for the Poor and Underserved*. 2005 May; 16(2):192–206. [PubMed: 15937382]
10. Harris KJ, Berkley JY, Fisher JL, et al. Using empowerment theory in collaborative partnerships for community health and development. *Am J Community Psychol*. 1995; 23:677–697. [PubMed: 8851345]
11. Baquet CR, Mack KM, Mishra SI, et al. Maryland's Special Populations Network. A model for cancer disparities research, education, and training. *Cancer*. 2006 Oct 15; 107(8 Suppl):2061–70. [PubMed: 16944470]
12. Creswell, JW., Klassen, AC., Plano Clark, VL., et al. The Office of Behavioral and Social Sciences Research. Best practices for mixed methods research in the health sciences. National Institutes of Health. Aug. 2011 http://obssr.od.nih.gov/mixed_methods_research/
13. Baquet CR, Ellison GL, Mishra SI. Analysis of Maryland cancer patient participation in national cancer institute-supported cancer treatment clinical trials. *J Clin Oncol*. 2008 Jul 10; 26(20):3380–6. Erratum in: *J Clin Oncol* 2008b Nov 1;26(31):5142. [PubMed: 18612153]
14. Baquet CR, Henderson K, Commiskey P, et al. Clinical trials: The art of enrollment. *Semin Oncol Nurs*. 2008 Nov; 24(4):262–9. [PubMed: 19000600]
15. Baquet CR, Commiskey P, Mullins CD, et al. Recruitment and participation in clinical trials: Socio-demographic, rural/urban, and health care access predictors. *Cancer Detect Prev*. 2006; 30(1):24–33. [PubMed: 16495020]
16. United States Department of Health and Human Services (Federal). HHS National Best Practice Award. A Model for Increasing Availability of Community-Based Cancer Trials In Rural Eastern Shore Maryland. 2004 Recipients: Baquet CR, M DeShields. Peer reviewed by HHS Committee on Public Health and Science.
17. Stokols D. Translating social ecological theory into guidelines for community health promotion. *Am J Health Prom*. Mar-Apr;1996 10(4):282–298.
18. Sandoval JA, Lucero J, Oetzel J, et al. Process and outcome constructs for evaluating community-based participatory research projects: A matrix of existing measures. *Health Education Research*. Sep 21.2011 Advance Access published.

FIGURE 1.
Components of Community-Academic Model

Table 1
COMMUNITY-ACADEMIC HEALTH CENTER (AHC) PARTNERSHIPS: PARTNER ORGANIZATION, FUNDING SOURCE, PARTNERSHIP TYPE AND ACTIVITIES

Bi-Directional Partners and Reach	Sources of Grant Funding	Types of Partnerships & Activities
Maryland Bi-Directional Partnerships		
Baltimore City High School Science Teachers	Bioethics Research Infrastructure (BRI): NIH/NCMHD RC2MD004761	F, BET, PRA, CTER
Bel Alton Community Development Corporation and School	Bioethics (BRI): NIH/NCMHD: 1RC2MD004761 NCI CNP: U01 CA114650	F, PR, CEO, CTER, BET, PRA
Reach: 120,000 rural residents	Telehome Trial: NIH/NCMHD RC2MD004800	
C. Datcher, Associates	NCI MSPN: 5U01CA86249	F, PR, CEO, CTER, PRA
Reach: 55,000	CRF UMSHN: CH605 CRF Kellogg Foundation: UMSHN Evaluation	
Chesapeake Potomac HHA	Telehome Clinical Trial: NIH/NCMHD 1RC2MD004800-01	F, PR, CEO, CE/CME
Reach: 300,000 rural residents		
Garrett County Health Department and HHA		
Reach: 30,000 rural residents		
Faith-based Ministerial Alliances	NCI MSPN and NCI CNP U01 CA114650	I, CEO, CTER
Reach: 400,000 congregants		
AREA HEALTH EDUCATION CENTERS (AHECs)	Bioethics (BRI): NIH/NCMHD RC2MD004761 CRF UMSHN: CH 605 CRF	F, PR, CEO, CTER, PRA, WPD, CE/CME, BET, TBD*
• Eastern Shore Area Health Education* Center (ESAHEC)	DHMH AHEC: OCPMP 04-008163G HRSA AHEC: U77 HP 03056	
Reach: 420,000	NCI CNP: U01 CA114650	
• Western Maryland Area Health Education Center (WMAHEC)	NCI: NON Biospecimen Barriers U01 CA114650S	
Reach: 235,000	NCI MSPN: 5U01CA86249 Telehome: NIH/NCMHD RC2MD004800 RWJ Foundation: Covering Kids	
Eastern Shore Cancer Research Network (ESCRN)	Bioethics: NIH/NCMHD 1RC2MD004761 CRF UMSHN: CH 605 CRF	F, PR, CTER, CEO, BET, CE/CME, PRA
Reach: 40,000 rural cancer patients, general population and families	NCI CNP: U01 CA114650 NCI MSPN: U01CA86249	
Maryland Rural Health Association	Bioethics: NIH/NCMHD 1RC2MD004761	I, CEO, BET, CRA
Reach: 1 million + rural residents	Telehome: NIH/NCMHD RC2MD004800	
Maryland MSI/HBCU's		
• Coppin State University (CSU) School of Nursing	NCI CNP: U01 CA114650	F, CEO, RTCD

Bi-Directional Partners and Reach	Sources of Grant Funding	Types of Partnerships & Activities
<ul style="list-style-type: none"> • Maryland Center at Bowie State University, affiliated foundation of Bowie State University (BSU) 	Bioethics (BRI): NIH/NCMHD 1RC2MD004761-01 revised NCI CNP: 1U01CA114650 CRF UMSHN: CH 605 CRF P20	F, CEO, BET, PRA, RTCD
<ul style="list-style-type: none"> • University of MD Eastern Shore (UMES) 	NCI CNP: U01CA114650 NCI MSPN: U01CA86249 NIH/NCI: 1U56CA096302	F, CEO, RTCD
Senior Residential and Day Facilities	NCI CNP: U01CA114650 NCI MSPN: U01CA86249	F, CEO
Reach: 200,000 Maryland seniors	CRF UMSHN: CH 605 CRF	
Times Newspapers and Community Services Foundation	Bioethics (BRI): NIH/NCMHD RC2MD004761 NCI CNP: U01 CA114650	F, CEO, PR, BET, PRA
Reach: 120,000	NCI MSPN: U01CA86249	
University of Maryland Statewide Health Network (UMSHN) - Partners	CRF OTRD: CH 725 CRF CRF UMSHN: CH 605 CRF	CEO, PR, PRA
Reach: Statewide general public		
National and Regional Bi-Directional Partnerships		
American Cancer Society (ACS) South Atlantic Division	Bioethics: NIH/NCMHD RC2MD004761 NCI CNP: U01 CA114650	F, PR, CEO, PRA, CTER
Reach: 8 states		
National Newspaper Publishers Association (NNPA) Reach: 200 community newspapers & wire service; 15 million readership	Bioethics (BRI): NIH/NCMHD RC2MD004761	F, PR, CEO, CTER, BET

F=Formal Partnership

I=Informal Partnership

PR=Partnered Research

CEO=Community Education and Outreach

CT=Clinical Trials Research

CTER=Clinical Trials Education and Recruitment

BET=Bioethics education and training

TBD=Tissue and Biospecimen Donation Barriers

PRA=Policy Research and Advocacy

RTCD=Research Training and Career Development

NCI/CNP=Maryland Regional Community Network Program

NCI/U56=Minority Serving Institution/Cancer Center Partnership for Research, Outreach and Training

NCI/MSPN=Maryland Special Populations Cancer Research Network

NCI/NON=National Outreach Network Biospecimen Awareness and Participation Initiative

Telehome=Social Determinants of Health: RCT of Home Telemonitoring of Chronically Ill Rural Patients

CRF UMSHN=Cigarette Restitution Fund (CRF) University of Maryland Statewide Health Network

CRF OTRD=CRF Other Tobacco Related Diseases Research Network

DHMH AHEC=Department of Health and Mental Hygiene Area Health Education Center Grant

HRSA AHEC=Health Resources Services Administration (HHS) AHEC Grant

HHA=Home Health Agency

WPD=Workforce Policy and Distribution

Box 1
SELECTED EXAMPLES OF TRANSFORMATION WITHIN MARYLAND CAE
MODEL

Community and Partners Transformation	Academic Health Center Transformation
<ul style="list-style-type: none"> ✓ Empowerment: increased ability to influence social, health, environmental resource distribution and outcomes ✓ Capacity to define, monitor and evaluate health and social needs ✓ Grant writing skills ✓ Federal grant management skills: budget preparation and justification, National Institute of Health biosketch preparation, grant results reporting, evaluation, invoicing, research project progress report ✓ Research ethics and bioethics training and maintenance of active certificates and Health Insurance Portability and Accountability Act training ✓ Increased “Research Literacy” and Health Literacy ✓ Participation as a research team member ✓ Institutional Review Board Member ✓ Community trains academic health center faculty and staff and health professions students in community needs, history, and community based research etiquette ✓ Evidence guided advocacy and data supported health policy ✓ Support for interdisciplinary education, healthcare, training of health professions students and academic health center faculty 	<ul style="list-style-type: none"> ✓ Increased skills in how to share research study roles and tasks with communities ✓ Humility ✓ Communication of complex data, scientific principles and concepts in culturally and literacy appropriate manner ✓ Community literacy skills development ✓ Etiquette for community engagement in research: understanding and accepting community expertise and defined roles on studies and in grants ✓ Incorporation of health disparities populations, hypotheses, and research methods in grant applications ✓ Increase in faculty training in community-academic engagement, inclusion of communities on grant budgets for defined research and educational roles ✓ Respect and recognition of roles and contributions of communities to research and health ✓ Training community partners in research methods, how to locate and use/interpret data and monitor health status, indices, program evaluation and other data. ✓ Appreciation for shared grant funding with community partners for defined roles on studies and dissemination of research results ✓ Policy research to inform health related policies ✓ Support for interdisciplinary team approach to education, training and healthcare delivery ✓ Internal finance systems development to support timely execution of subcontracts for external community groups and invoice payment