RESEARCH PLAN

2. Specific Aims

HIV rates are significantly higher among non-Hispanic blacks than among any other racial or ethnic group in the United States (US): African-American men are 7 times more likely and African-American women are 21 times more likely to be diagnosed with HIV than their white counterparts. There is now evidence that sexual network dynamics, including overlapping sexual partnerships (concurrency) play an important role in racial disparities in HIV. Due to structural factors, including highly disproportionate incarceration rates, African-Americans are more likely to be in sexual networks where people have more concurrent sexual partners. Mathematical models show that achieving small changes in levels of sexual concurrency, as little as reducing concurrent sexual partners by 0.2 (mean), can have a dramatic impact on the chain of HIV transmission. Thus an HIV prevention message of 'one partner at a time' is as important as more traditional messages of promoting abstinence or using condoms.[1] This spring our Community Action Board (CAB) of the Center for AIDS & STD sponsored a seminar on "HIV Disparities: Impacts on African-African and African-Born Populations". Seminar participants explicitly requested that the University of Washington (UW) in partnership with the community help develop messaging around sexual network information and research that could be used to help reduce HIV stigma and illustrate both the concept and importance of concurrency. The excitement, energy, and insights generated at the Disparities Seminar led directly to this proposal. Our research objective is to help reduce disparities in HIV among African-American and African-born populations in King County. Our research goal is to utilize community-based participatory research to translate the science of sexual networks into culturally-resonant HIV prevention messages as a new approach to help reduce racial disparities in HIV.

2.1. Specific Aim 1: Perform formative research to develop appropriate HIV prevention messages that convey the importance of sexual network dynamics in King County, Washington.

2.1.A. Our CAB will conduct focus group and key informant interviews with members from highly-affected communities: a) native-born African-Americans and b) foreign-born blacks, in particular, Ethiopian and Kenyan immigrants, who form the majority of incident HIV among foreign-born blacks in King County.

Subaim 2.1.1. As a community-academic partnership, our CAB will continue to inform ourselves about best practices in community-participatory research, by holding brown bag seminars with leading practitioners and discussing approaches that draw from community strengths.

2.1.B. Develop a multimedia tool that illustrates the principles of HIV transmission in sexual networks for use in community discussions. This video/animation tool will be designed so that it can be accompanied by narrated text in different languages and will be iteratively piloted in English, Kiswahili, and Amharic.

2.1.C. Identify sexual network message dissemination channels in the target populations (African-Americans and East African immigrants). These channels may include social network approaches (person-to-person communication), civil society approaches (churches, community events, and community-based organizations), and the media (radio, TV, and print).

2.2 Specific Aim 2: Pilot and evaluate the impact of the HIV prevention concurrency messages among populations of African-Americans and African-born populations in King County, Washington.

Hypothesis: A culturally-informed understanding of the impact of overlapping sexual partnerships and sexual network dynamics on HIV transmission can reduce levels of risky concurrent partnerships.

2.2.A. Using Aim 1 findings, launch HIV prevention concurrency messaging among: 1) native-born African-Americans and 2) Ethiopian and Kenyan immigrant groups. Evaluate acceptability and impact, including message comprehension and recall (1-month post recall among n=60), intention, and attitude strength.

Subaim 2.2.1. As a community-academic partnership, our CAB will build capacity by educating ourselves about cutting edge approaches to the development and marketing of health messages.

2.2.B. Develop and implement a manual of the community-based research translation processes used, including community involvement and outreach; HIV prevention message development; and message dissemination through social networks (including faith-based communities[2]) in affected communities.

2.3 Specific Aim 3: HIV disparity message findings and tools will be shared in a national seminar.

2.3.A. Utilize the Center for AIDS Research network of sociobehavioral cores to host a national meeting.

2.3.B. At this meeting explore the feasibility of a community-collaborative multi-site randomized controlled trial collecting social and sexual network data and assessing impact of a sexual concurrency intervention for primary HIV prevention in US areas with large populations of African-Americans and African immigrants.

3. Background and Significance

Disparities in rates of HIV infection among blacks as compared with whites in the United States (US) are substantial, they begin early (occurring among adolescents[3] as well as adults), and have deeply damaging impacts on health and society. The Centers for Disease Control and Prevention (CDC) recently reported HIV case data from 33 states showing that blacks accounted for 51% of incident HIV in 2001–2005, despite being only 13% of the US population; concluding that "[n]ew interventions and mobilization of the broader community are needed to reduce the disproportionate impact of HIV/AIDS on blacks in the United States."[4]

Only in the last few years have the reasons for this disparity been more broadly explored[5] to include investigation of structural factors such as disproportionate incarceration levels in the black community. Between 1985 to 1995, blacks were incarcerated at 10 times the level of white men, and about one out of 12 black men are in jail or prison, compared with one in 100 white men. At this rate, one in three black men will be incarcerated in their lifetime. These factors severely disrupt the male:female sex ratio and social fabric in African-American communities. Higher and differential rates of imprisonment[6] as well as violence, joblessness, drug use, and premature mortality reduce the number of black men available in the heterosexual partnership pool. Adimora's research in rural North Carolina has shown that concurrent sexual relationships are more prevalent among African-Americans: 53% of black men had concurrent partnerships in the preceding five years, as did 31% of black women.[7] Data from the National Survey of Family Growth found that concurrency prevalence was 21% among blacks, 11% among whites, and 8% among Hispanics; multiple logistic analysis showed that the relationship between concurrency and black race (OR = 1.2; 95% CI = 1.1-1.4) was confounded by low levels of marriage among blacks.[8] Women in Adimora's focus groups discussed the difficulties of finding a monogamous relationship given the confluence of factors including the low ratio of men to women, economic oppression, racial discrimination, and the high incarceration rates of black men.[9]

Another factor only recently understood is how the degree of sexual segregation and connectedness of sexual partnerships and networks by race contributes to HIV transmission in the US. A full quarter-century into the HIV epidemic, new ways of understanding HIV transmission patterns and of addressing HIV prevention are desperately needed. Helping communities understand and convey the impact of sexual networks is one such new approach. Uganda remains the only place where an understanding of the impact of sexual partnerships that overlap in time (i.e., concurrency) informed prevention messages. The 'zero grazing' campaign launched in Uganda in the early 1990s succinctly conveyed the information that having more than one sexual partner at a time fueled the epidemic. Mathematical models have now shown that even a small increase in the average number of sexual partners (mean of 0.2 more partners) can dramatically increase a group's risk for HIV. Conversely, a relatively small change in behavior—reducing average number of sexual partners and maintaining one partnership at a time—could have a dramatic effect in breaking epidemic HIV transmission.

Uganda's epidemiologically-sound and culturally-contextualized sexual concurrency prevention message engendered understanding and community dialogue and led to a dramatic reduction in the number of sexual partnerships with a concomitant decline in HIV incidence that was celebrated worldwide. Remarkably, no other communities have picked up and adequately conveyed the concurrency message to address HIV prevention. This is despite the fact that factors that facilitate concurrent sexual relationships are more prevalent among some African-Americans, and thus may contribute strongly to disparate HIV incidence. We propose to develop and pilot sexual concurrency-based HIV prevention messages in our communities of African-American, and African-born black adults in Seattle-King County via the Community Action Board (CAB) consortium of the University of Washington Center for AIDS & STD (CFAS). The community-based participatory research process underway through our CAB will allow such a campaign to engage with the communities at risk, to develop messages that will resonate here and, potentially, in other similarly-disproportionately impacted communities of African-American and African-born citizens across the US.

HIV in King County

While white men who have sex with men (MSM) continue to account for the majority of HIV and AIDS cases in King County, within the last decade, public health officials have observed important trends by race. In a recent epidemiological review, Public Health-Seattle & King County, our local health department, reported a significant decreasing trend in HIV/AIDS cases for whites but an increasing trend among non-Hispanic blacks.[10] For example, African-American men have two times the rate seen in whites, and African-American women have 14-fold higher rates than white women.

Classification of the HIV-infected population by place of birth shows that at least half of cases among blacks are among members of groups born outside of the US. Data through 12/31/2006 show that 12% of HIV-infected residents of King County were born outside the US and its territories and that this proportion is

increasing over time with most of the increase being among foreign-born blacks and Hispanics. In addition, foreign-born blacks are more likely than US-born blacks to be female and/or to be infected heterosexually. This pattern also appears to be occurring in other places in the US, where African-born persons are accounting for an increasing proportion of incident HIV.[11] It remains unclear in King County whether African-born immigrants come into the US already HIV-positive (the assumption that all immigrants are HIV-tested before entry to the US is questionable), acquire their HIV here (as seems to be the case in Los Angeles[12]), or acquire HIV when exposed via risky sexual encounters during often-frequent visits back to the home country.

When stratified by place of birth, the incidence of HIV among blacks suggest different trends for African-American and foreign-born blacks. Among native-born blacks, HIV incidence is stable and MSM account for a majority of cases, while among foreign-born blacks, HIV incidence is increasing and is due primarily to heterosexual contact (see Figure 1). These data and trends suggest that appropriate prevention efforts and messages need to be targeted differently to groups of blacks in Seattle based on their place of birth.

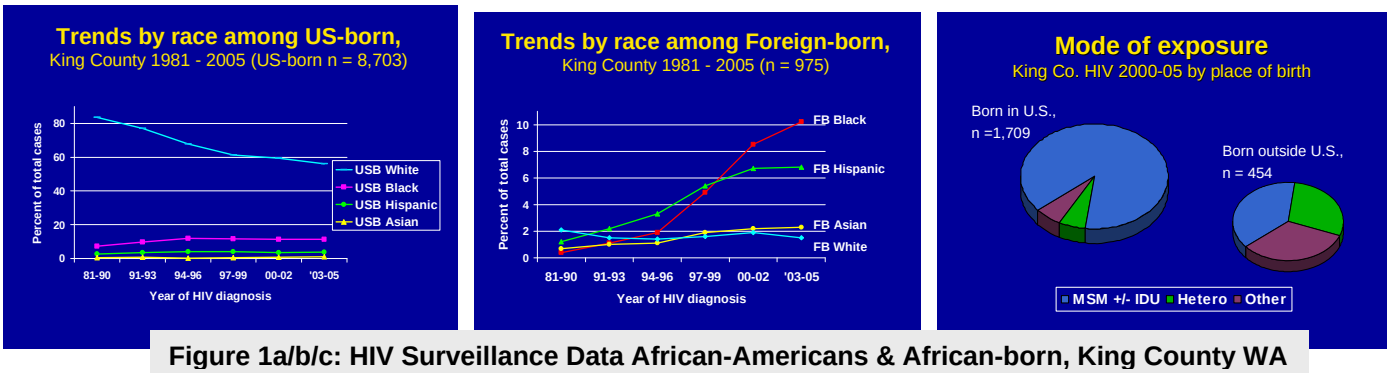


Figure 1a/b/c: HIV Surveillance Data African-Americans & African-born, King County WA

Sexual Networks/Concurrency and HIV Disparity Among African-American/African-born Americans

Beginning in the late 1980s, mathematical modelers demonstrated characteristics of sexual partnerships that served as determinants of HIV transmission.[13] These included mixing across age and/or high versus low prevalence risk groups[14] as well as concurrent partnerships.[15] Partnerships that become linked then form components that can accelerate transmission.[16] Even absent other STIs, the level of partner concurrency in a given population has been shown to be an independent risk factor for HIV, particularly in early stages of the epidemic. The sexual network structure itself, specifically the degree of concurrency, becomes more important in determining risk than does the total number of sexual partners individuals have had over time.[17] In population-based surveys levels of concurrency have been found at 15% (Nat'l Survey of Family Growth)[18] to 22% (Seattle random digit dial survey[19]), while in STD clinics such as Seattle's the majority of those with bacterial STIs report concurrent partners in the last year.[20]

The sexual network perspective changes the way we think about targeting concepts such as 'risk groups' and 'risk behaviors,' and leads to a richer, more productive understanding of HIV transmission and prevention. The inadequacy of these concepts has become clear as HIV prevalence has risen among groups that do not engage in individually risky behavior, for example, monogamous married women. By the same token, a group of persons with extremely 'risky' individual behavior may have little actual risk of HIV exposure if their partners are uninfected and are not linked to the rest of the partnership network. It is not only individuals' behavior that defines their risk; it is their partners' behavior and (ultimately) their positions in a sexual network.

The network perspective also changes the way we think about population-level risk factors: the key issue is not simply the mean number of partners, but the connectivity of the sexual network, which can be established even in low density networks. Concurrent partnerships are one of the primary sources of connectivity. Serial monogamy in sexual partnerships creates a highly segmented network with no links between each pair of persons at any moment in time. Relax this constraint even slightly, that is, allow people to have more than one partner concurrently, and the network becomes much more connected. The result is a large increase in the potential spread of HIV, even at low levels of partnership formation. Networks thus determine the level of individual exposure, the population dynamics of spread, and the interactional context that constrains behavioral change. Taking this seriously represents a paradigm shift in the study of HIV.

Another factor to consider is the degree to which different populations mix sexually. Assortative mixing (that is, 'like having sex with like') leads to segregated networks which channel infection and can sustain long-term prevalence differentials, like the persistent racial differentials in HIV/STI morbidity observed in the US.[21] Rates of gonorrhea are 20 times greater among non-Hispanic blacks than among whites, of syphilis are 15 times greater,[22] and among young people, of HIV infection are 20 times greater.[23]

Race is a proxy for a number of factors that influence risk exposure: discrepancies in health care access, differences in sexual behavior, possible genetic differences, and the structure of partnership networks. But the stability of the race differential persists after controlling for socioeconomic status[24] and number of sexual partners.[25] This suggests that, while poverty and behavioral differentials may matter, they alone do not account for the observed racial disparities in prevalence. While there has been some speculation that genetics may play a role, no mechanism by which genetic differences might influence susceptibility or infectivity has been proposed, and the consistent differences across a wide range of sexually transmitted pathogens suggests the transmission network is a more likely explanation.

Segregation alone cannot create a prevalence differential; it simply slows the rate of spread between groups. For HIV/STI differentials to persist over the long term, it is also necessary to have differential transmission rates within subgroups. This can be induced by different rates of partner change or of concurrency across groups. The war on drugs has produced accelerated and highly disproportionate rates of incarceration in the black community in the US, including in King County where, in 2000, African-Americans were sentenced for drug felonies at a rate of 25 times more than whites.[26] This factor, among others such as higher rates of morbidity and mortality among African-American men,[27,28] may contribute to higher levels of concurrency that facilitate HIV transmission within black communities.

Nonsexual social networks also exert important influences on formation and maintenance of sexual relationships.[29] Understanding the influences and perceived rationale for concurrent partnerships will be important to craft prevention messages that resonate with the community. Qualitative work regarding reasons for concurrency among Seattle heterosexuals has been done,[30] but did not include African-born subjects. A study conducted by the STD Clinic collecting local sexual network data from 1998-2003 chlamydia cases found that the context of sexual partnership formation as well as the percentage reporting concurrent partnerships differed by ethnicity. African-American men and women reported meeting partners in public places more often than did whites. African-American men reported having concurrent partners more often than white men, and African-American women reported that their partners had other partners more frequently than did white women. Duration of concurrency was different among groups: among African-American men, 49% of concurrent relationships persisted for >30 days compared to 28% among white men ($p=.04$). Among men, factors associated with African-American ethnicity included concurrent partnerships (OR 2.1, 95% CI 1.2-3.8). Among women, factors associated with African-American ethnicity included believing that a partner has other partners (OR 2.0, 95% CI 1.7-2.5). Observed differences in patterns of sexual mixing, concurrency and partnership formation by ethnicity persisted after adjustment for socio-demographic variables and sexual behavior, differences, the authors conclude, that help explain observed disparities in STI rates by race.[31]

4. Preliminary Studies

This community-based participatory research project is made possible through the UW Center for AIDS & STDs Community Action Board (CAB) that was successfully established in 2006 and is the umbrella community organization for this proposed work. Our consortium of community members and academic researchers represents a strong grounding in the participatory research framework required for this project.

- **Community Action Board Prevention Outreach: HIV Disparities Working Group (alphabetic order):**
  - *African-American Reach & Teach Ministries* (AARTH): Rev. Mary Diggs-Hobson, Yalonda Gill-Masundire, Peter Masundire. http://www.aarth.org/. AARTH Ministry presents opportunities to work with African-American and African-born faith communities in Seattle/King County. AARTH is the only Seattle African-American faith-based organization that focuses on comprehensive health education including HIV/AIDS.
  - BABES Network-YWCA: Sarah Benton http://www.babesnetwork.org/. BABES has been building community among a diverse group of HIV-positive women in Washington since 1989. BABES will help to coordinate the work of fashioning and testing messages that seek to reduce sexual concurrence among local African-Americans and African immigrants. This complements their HOPE Project, which prioritizes outreach and prevention education to African-Americans and African-born populations.
  - *Black Leadership Council* (BLC): Michele Peake, PhD, James Griffin, Quinten Welch: http://www.metrokc.gov/health/apu/blc/. The Black Leadership Council (BLC) brings to this project its commitment to creating, nurturing, and sustaining leadership and action within the African-American community to stop the spread of HIV. James Griffin (community) and Michele Peake (PhD), BLC members, will be active participants in the HIV Disparities Working Group and will provide community experience and facilitation of connections to the African-American community throughout this project.

- *Seattle Black Pride*: Austin Anderson. http://www.seattleblackpride.org/. Seattle Black Pride builds community by focusing on four areas: HIV/AIDS & STDs intervention and prevention programming; community capacity building; holistic life trainings; resource, advocacy and referral services. Its 3-day July 2006 Black Pride event was a critical success, with hundreds of attendees, and its work on the 'Many Men Many Voices' project illustrates its unique capacity to reach the black same-gender loving community.
- *Center for Multi-Cultural Health (CMCH)*: Wendy Nakatsukasa-Ono. http://www.multi-culturalhealth.org/ CMCH, a minority, community-based organization established in 1976, brings extensive experience in working with Africans in King County (e.g., the RARE study). CMCH has particular expertise in designing and developing HIV prevention interventions for this group, community outreach, and conducting focus groups and key informant interviews. They also will help facilitate African-born population access.
- *Center for Well-being of Africans in America (CWAA)*: Caroline Sawe. http://www.cwaausa.org/. CWAA offers its knowledge of the African-born community in King County and will act as a liaison with the research team. CWAA has established trusted relationships with African-born community leaders and has an ample resource of translators and trusted interpreters.
- *Covenant Missions International (CMI)*: Rev. Martin Ndegwa. CMI brings to this project their experience in engaging foreign-born blacks in dialogues around HIV/AIDS. Their staff is primarily foreign-born and provides essential language expertise. Also, the trust and respect they have developed with these communities will facilitate access to the social networks essential to reach this population.
- *Cross Cultural Health Care Program (CCHCP)*: Sita Das. http://www.xculture.org/. CCHCP can provide professional training in the areas of cultural competency and interpreting as well as research assessment administration and focus group facilitation. CCHP has extensive experience in community based qualitative research and will provide access to a diverse group of contacts and collaborators.
- *Harborview Medical Center HIV Clinic*: Meti Duressa, MSW and David Lee, MSW http://depts.washington.edu/madclin/. The Madison Clinic is the larges HIV clinic in the Northwest US and provides medical care and social services to HIV infected persons many of whom are African-American (20%) and African-born (8%). The participation of their clinic staff who are intimately involved in outreach programs to African-born and African-American populations will provide essential insights into the best messages and methods for reaching these populations.
- *HIV Vaccine Trials Network (HVTN) Community Advisory Board*: Kim Louis, David Garcia; Steven Wakefield (Legacy Project). http://www.hvtn.org/community/index.html. The HVTN has been working with the Seattle African-American community to increase awareness about HIV in general and HIV vaccine research in particular. These members bring knowledge and skills in working with communities to this CAB Working Group and this project.
- *Lifelong AIDS Alliance*: Tina Podlodoswki, Austin Anderson (Chicken Soup Brigade). http://www.lifelongaidsalliance.org/. Lifelong AIDS Alliance is committed to preventing the spread of HIV and to providing practical support services and advocacy for those whose lives are affected by HIV/AIDS. Lifelong has developed strategies and partnerships to connect with HIV-positive members in communities of color and foreign-born populations, and brings their experience and expertise in this area to the project.
- *Neighborhood House/Project HANDLE*: Warya Pothan, Tamika Jackson, Donna Bland, Charles Wilson. http://www.nhwa.org/lookinside/program.php?program=Community+Health. Project HANDLE has eight bicultural and bilingual community health workers and community liaisons ensuring that dissemination of HIV prevention services will be culturally and linguistically appropriate. Their Community Advisory Coalition members are from the African-American and East African communities and can help provide access to the target populations for focus groups, message piloting, and other related services.
- *People of Color Against AIDS Network* (POCAAN): Kenny Joe. http://www.pocaan.org/home.html. POCAAN is a multi-cultural AIDS prevention organization created in response to the devastating impact of HIV on communities of color in Washington State. The agency has successfully run a number of HIV prevention, testing, and outreach activities in the African-American community in King County.
- *Public Health-Seattle & King County* (PHSKC): Bob Wood, MD (HIV Program Director). http://www.metrokc.gov/health/apu/. PHSKC will help coordinate the work of fashioning and testing

messages seeking to reduce sexual concurrency among local native- and foreign-born Blacks and will assist in every way possible to assure community involvement, and ensure that these new efforts compliment activities already taking place.

- *Refugee Women's Alliance* (ReWA): Somerieh Amirfaiz, Cynthia Pearson, PhD http://www.rewa.org/ . ReWA has 5 sites throughout King County and serves over 4100 immigrants each year. Their experience providing services for immigrants and their language expertise will facilitate access to African-born populations for focus groups as well as message development and testing.

Collaboration History

One of the missions of the Center for AIDS Research (CFAR) is to promote knowledge of CFAR research findings and the importance of HIV research through community outreach. Therefore, in 2005, in response to a recommendation from an External Advisory Committee Meeting, the Sociobehavioral and Prevention Research Core (SPRC) took the lead in setting up a new Community Action Board for the Center for AIDS and STD (CFAS) that would strengthen the linkages between CFAS/CFAR and the communities that they serve. A series of community planning meetings were attended by a variety of stakeholders including service providers, representatives of PHSKC, CFAS/CFAR affiliates and staff, and interested community members. These meetings laid the foundation for, and provided feedback on, potential roles and activities of the new CAB.

In 2006 the CAB adopted the following mission: "to encourage communication and build trustworthy collaborations between UW CFAS researchers and community members and community-based organizations to enhance local, national, and international prevention, treatment, and education activities." CAB goals are:

- Make HIV/STI research more transparent and useful by engaging CAB members to help develop improved and targeted information dissemination to the community.
- Use CAB activities to help Center for AIDS and STD affiliates and researchers learn about local community organizations, concerns, activities and opportunities for collaboration.
- Prioritize Center for AIDS and STD service to communities and identify important research topics to ensure community relevancy and collaboration.

The CAB consists of two groups: (1) a Founding Committee and (2) a series of flexible Working Groups. The Founding Committee is comprised of nine people drawn from the local community (broadly defined) as well as a representative of CFAS/CFAR. The Founding Committee is co-chaired by Steve Wakefield (HVTN) and Tina Podlodowski (Lifelong AIDS Alliance).

The CAB Working Groups are either issue or activity-based, and the membership of these working groups is flexible and consists of at least two founding committee members but is also open to community members interested in the particular issue or task. There are currently three working groups focused on the following areas: 1) Information Dissemination (including developing a seminar series under banner "Ask The Researcher"); 2) Bridging Research and Practice (including community HIV research literacy boot camp & lay workshops when guest speakers are at UW); and, 3) Prevention Outreach (focusing on linking HIV/STD prevention science research to community activities and program impact evaluations). The Working Group on *Prevention Outreach: Disparities* is taking the lead in this project, although the proposed work cross-cuts the CAB's activities in all of these areas.

Principles of community-based participatory research have been built into the CAB process from its inception. We have utilized principles that have been iteratively developed by the Community-Campus Partnerships for Health (CCPH), which is based at the UW. In 2006, CCPH re-examined these principles, first endorsed in 1998. This process was informed by a Community Partner Summit held in 2006 in Racine, WI, During the Summit, community partners articulated 'what is working' and 'what is not working' in community-campus partnerships from their perspective and developed a revised framework for authentic community-higher education partnerships:

- Partnerships form to serve a specific purpose and may take on new goals over time.
- Partners agree upon mission, values, goals, measurable outcomes, and accountability for the partnership.
- The relationship between partners is characterized by mutual trust, respect, genuineness, and commitment.
- The partnership builds upon identified strengths and assets, but also works to address needs and increase capacity of all partners.
- The partnership balances power among partners and enables resources among partners to be shared.
- Partners make clear and open communication an ongoing priority by striving to understand each other's needs and self-interests, and developing a common language.

- Principles and processes for the partnership are established with the input and agreement of all partners, especially for decision-making and conflict resolution.
- There is feedback among all stakeholders in the partnership, with the goal of continuously improving the partnership and its outcomes.
- Partners share the benefits of the partnership's accomplishments.
- Partnerships can dissolve and need to plan a process for closure.[32]

Our CAB is now in the process of developing overall procedures to ensure transparency, effective collaboration, and allocation of resources for this and any future collaborations. An important principle of equality has been established, with the proposed budget for this project constituting just over 50% allocation to community efforts and members with the remainder to UW academic staffing for study administration and scientific input. Further evidence of the commitment of CAB members to this proposed project can be seen in the fact that both UW and community agencies are bringing concrete resources to the table, in the form of in-kind personnel time (via attendance at working group sessions; UW Sociobehavioral and Prevention Research Core [SPRC] staff time for Foster, Wood), and also with supplemental funding for specific prevention message activities (Project HANDLE, Lifelong AIDS Alliance).

In March 2007, the CAB and the CFAR SPRC sponsored a seminar on “Disparities in HIV-STIs: Impacts on African-African and African-Born Populations”. More than 150 people packed the day-long conference at UW to hear leading researchers—Dr. Martina Morris, Dr. Adaora Adimora from University of North Carolina, and Dr. Rucker Johnson from University of California, Berkeley. (Videos of the talks can be seen at http://sprc.washington.edu/events/conferences.shtml.) Johnson’s research concluded that demographic groups with the largest increase in male incarceration rates experienced the largest increase in AIDS rates,[33] an ecologic association also noted by Peterman,[34] and Thomas,[35] et al. Male-male sex and rape in prison are not infrequent events[36] and incarceration rates have a destabilizing effect on heterosexual relationships, severely disrupting the 1:1 male:female sex ratio and allowing concurrent sexual partnerships to thrive.[37] Poverty, joblessness, historical factors including welfare policy, and other factors also mitigate against long-term marital relationships in the African-American community.[38] Dr. Adimora reported on her sexual network and qualitative research with rural African-Americans in North Carolina. Women in her focus groups described how hard it is to find a decent relationship and how, due to environmental factors such as poverty and racism, black women often settle for relationships with men who they suspect or know are not monogamous. She noted that individual behavior alone does not explain racial disparities in HIV and that structural factors such as high prison rates for blacks must be addressed in order to reduce racial disparities. Morris presented the sexual concurrency modeling work outlined in Figure 4. The interest and awareness of new approaches to thinking about racial disparities and HIV that were generated by this seminar led to this proposal.

Key Personnel

- **Ann Kurth, CNM, PhD** (PI, research): Dr. Kurth is Assistant Professor in Biobehavioral Nursing and Health Systems, UW School of Nursing, and Adjunct Assistant Professor in Epidemiology, UW School of Public Health and Community Medicine. She also is in the process of receiving joint appointment in the UW Department of Global Health. As a Core Coordinator for the Sociobehavioral and Prevention Research Core of the UW Center for AIDS Research (CFAR), she has worked with the CAB since its creation. Trained in epidemiology (UW), nurse-midwifery (Yale University), population and family health (Columbia University), and African Studies (undergraduate minor, Princeton University), Kurth brings over 15 years of HIV/STI research and service delivery experience to this project. For example, while serving as president of the national Association of Nurses in AIDS Care, she initiated a diversity assessment process for that organization to address disparities related to race and other characteristics. Kurth has conducted research with members of the racial/ethnic groups that are the focus of this grant, beginning with a community-based HIV prevention effort with a minority neighborhood corporation in New Haven Connecticut (CDC funding). She has worked on a community-based HIV outreach and testing project done with CAB partner People of Color Against AIDS Network (POCAAN) in Seattle. Dr. Kurth’s HIV prevention and disease self-management research in Kenya (where she currently leads 2 studies and is co-investigator on 2 others) has used community action boards to ensure development of community-participatory, culturally appropriate HIV prevention interventions.
- **Steve Wakefield** (co-PI, community). Mr. Wakefield has served as the global Community Outreach Coordinator for the HIV Vaccine Trials Network. Currently he also directs the Legacy Project, which is dedicated to intervening against the high prevalence and incidence of HIV among black men who have sex with men in the US. Mr. Wakefield co-chairs the CAB and has worked with it since its inception.

- **Tina Podlodowski** (co-PI, community): Ms. Podlodowski is Executive Director of Lifelong AIDS Alliance, the largest AIDS Service Organization in King County and one of the five oldest ASOs in the US. She has had a long and varied career as a legislator, technology executive, and philanthropist. She also served on the Seattle City Council from 1996-2000 and was director and general manager of Microsoft University, Microsoft's worldwide training business. Ms. Podlodowski co-chairs the CAB and has worked with it since its inception.
- **Martina Morris, PhD** (co-PI, research): Dr. Morris is an internationally recognized social science researcher in the field of HIV/AIDS. She holds a joint appointment as professor in the departments of Sociology and Statistics at the UW. Dr. Morris is founding director of the UW CFAR Sociobehavioral and Prevention Research Core, founding co-director of the UW CFAR scientific program on mathematical modeling, and co-PI of the Fogarty Frameworks in Global Health project at the UW. She is outgoing Director of the UW Center for Studies in Demography and Ecology, having led the Center through its first five years of funding from NIH.

Morris received her PhD in Sociology and her MA in Statistics from the University of Chicago. In her research over the past 20 years, she has been a pioneer in the application of network theory and methods to the study of HIV/STI transmission. Her work with Dr. Kretzschmar drew attention to the role of concurrent partnerships in the spread of HIV, a topic that has generated much subsequent research. She currently heads a large interdisciplinary, international team of scholars who are developing methods for the analysis and simulation of networks and disease spread. The project seeks to integrate network survey design, data collection, statistical models, and dynamic simulations, to ensure a strong connection between theory, methods and data. Her interest in developing feasible methods for network data collection and analysis has culminated in the first guide to network survey design "Network Epidemiology: A Handbook for Survey Design and Data Collection". The modeling and network simulation project has a released a computer package, statnet, that that is available for free to the public (see http://csde.washington.edu/statnet/). Her papers have appeared in a wide range of journals, including Nature, AIDS, the American Journal of Epidemiology, American Journal of Sociology, American Sociological Review, Social Networks, and Mathematical Biosciences.

- **Malcolm Parks, PhD** (co-investigator). Dr. Parks conducts research on interpersonal relationships, persuasion, organizational change, and social networks. He is Associate Professor of Communication and part of the scientific core of the UW Health Marketing and Communication Research Center, http://depts.washington.edu/hprc/docs/pr_excellence.pdf
- **Jennifer Foster, PhD.** Dr. Foster is with the Sociobehavioral and Prevention Research Core of the Center for AIDS Research, and provides staff support to the CAB. She is trained in geography and international development (with a focus on sub-Saharan Africa) and has conducted fieldwork in South Africa related to meeting basic needs.

Morris' work on sexual and social network methodologies will be leveraged in our study, which focuses on using a community-based consortium to culturally translate the concurrency dynamics that help drive HIV disparities in the black community. The gist of that scientific understanding is outlined below.

Importance of Sexual Partner Concurrency: Differences between serial monogamy (one sexual partner at a time) and sexual concurrency are illustrated in Figure 2. Under serial monogamy, each partnership must end before the start of the next, allowing time for diagnosis and treatment of a STI if present. With concurrency, more than one partnership can be active at one time.

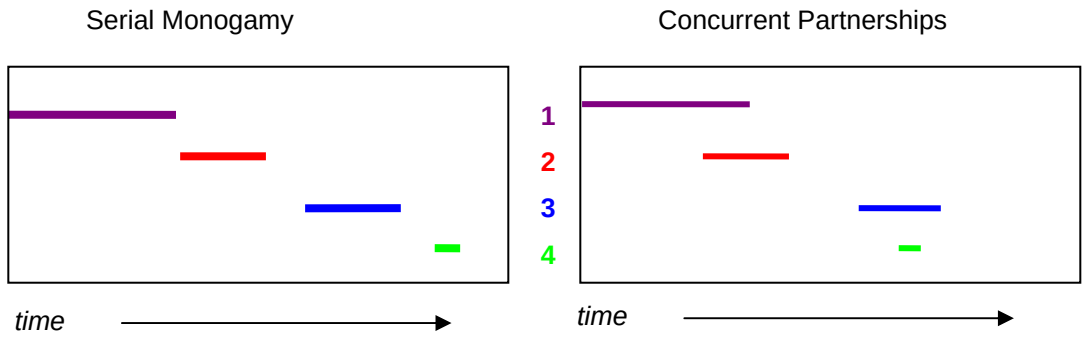
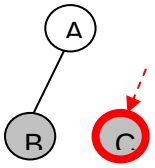


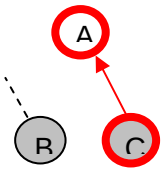
Figure 2: Sexual Partnership Patterns – Single vs. Concurrent Relationships

The impact of concurrency at the individual level is shown in Figure 3. The figure tracks an infection originally passed to partner C, under concurrency and serial monogamy. If A is the survey respondent, the effects of concurrency will not be observed in terms of A's infection status, which is the same in both scenarios, but in terms of A's transmission to B in time 2.

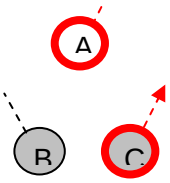
Serial Monogamy



Time 1:
C infected

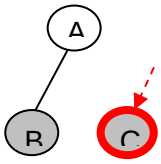


Time 2:
A infected
C transmits

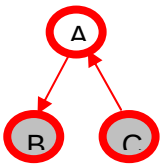


Time 3:
A, C transmit

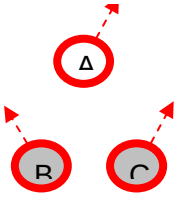
Concurrency



Time 1:
C infected



Time 2:
A,B infected
A,C transmits



Time 3:
A,B,C transmit

Figure 3. Concurrency Effects, Individual Level

Several empiric studies have shown higher STI risk among persons who report that they themselves have concurrent partnerships, as compared with persons in serial monogamous relationships.[39,40,41,42] A Seattle phone survey found after adjusting for lifetime number of partners that concurrency was associated with an over three-fold higher risk of self-reported STD.[43] It may be that STI risk associated with the index case's *own* concurrency serves as a proxy for a densely connected network.[44] Density is one element of network structure (along with centrality of infected persons, degree of segmentation, and specific microstructures) that has been found to be important for transmission dynamics.[45] Generally, we expect the highest HIV/STI risk to accrue to 'upstream' partners of persons who have multiple partnerships. HIV/STI-positive persons who have concurrent sexual relationships are at risk of *transmitting* infection,[46] with important implications for that individual's partners and for population-level health. As Figure 3 shows, partner 1 is indirectly exposed to partner 2, and partner 3 is exposed to partner 4. Not only does this expose two additional persons, it creates two new potential chains of infection from these persons to others.[47] Concurrent partnerships link individuals together to create large connected "components" in a network—if you have more than one partner, your partner may have more than one partner. Such connected components function like a well-designed highway, allowing a pathogen to travel rapidly and efficiently to many destinations (Figure 4).

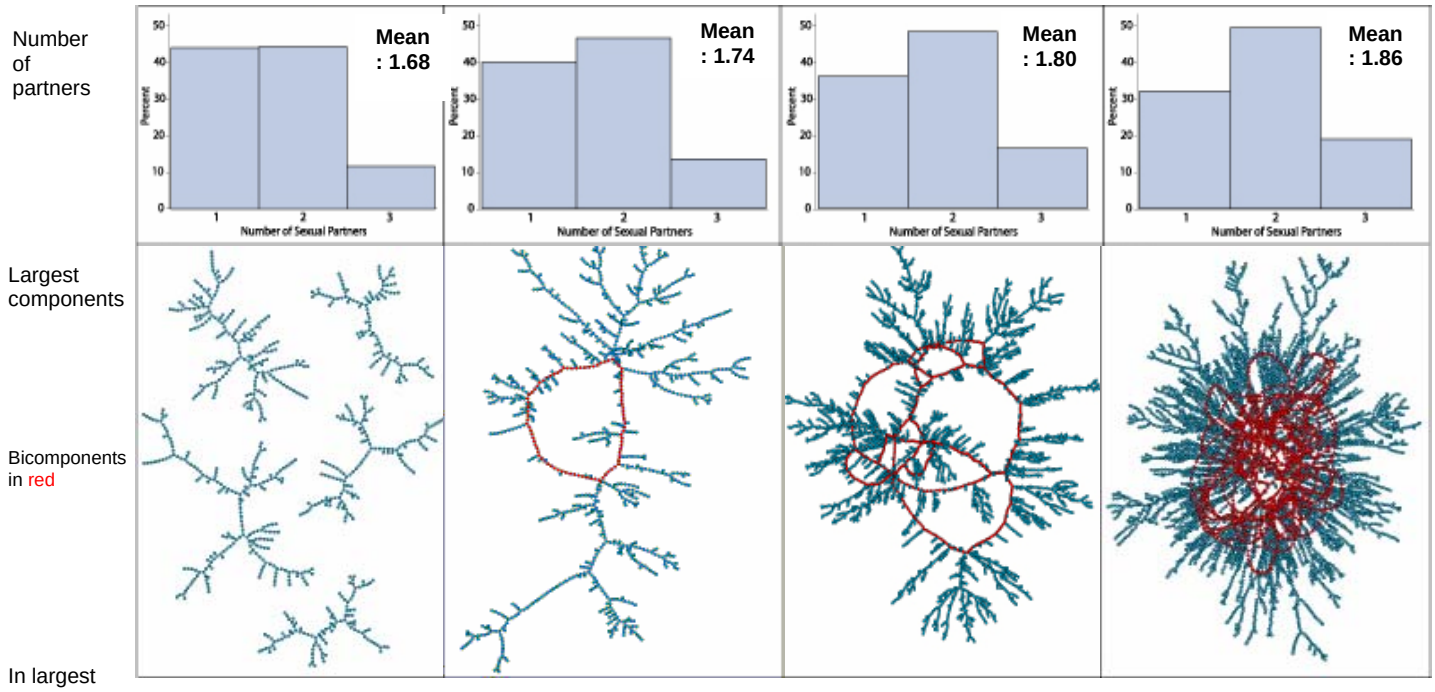


Figure 4. Impact of Concurrency on Network Connectivity and Robustness

This small difference in partnership sequence can have a remarkably large impact on both network connectivity and epidemic spread. The resulting impact of concurrency at the population level is dramatically illustrated in Figure 4. The panels in the figure step through small changes in the level of concurrency (shown in the top panels) and its impact on the largest component and bicomponent in the network (in the bottom panels). As the mean of the concurrent partnership distribution rises from 1.68 to 1.84, a difference of less than 0.2 of a partner, the connectivity in the network rises dramatically: the fraction of the population in the largest connected component rises from 2% to over 60%. In addition, we observe the growth of a multiply connected component (the "bicomponent," shown in red), where people are connected by at least two independent paths. Multiply connected components are an important feature of the network because they signal a more robust transmission system. It is harder to disrupt the chain of infection when multiple paths exist.

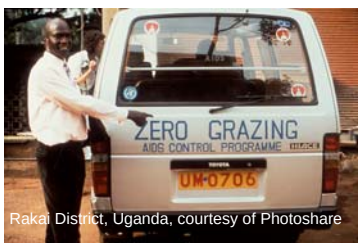
Breaking the chains of these transmission dynamics—by helping people understand the importance of reducing levels of multiple, overlapping partnerships—is the main goal of our community-academic partnership.

Understanding of HIV Issues among Persons of African Descent in King County

A study of African-Americans and African immigrants living in King County was conducted by one of our CAB partners, Public Health-Seattle & King County (PHSKC), using an anonymous, self-administered survey in English, Amharic, French, Somali, and Swahili. The project team distributed surveys through local groups and organizations and received 203 completed surveys. More than half of the surveys were completed by individuals from eight countries— Ethiopia, Kenya, Somalia, Tanzania, Nigeria, Ghana, Cote D'Ivoire, and Eritrea. CAB member Dr. Bob Wood, PHSKC's Director of HIV/AIDS Control published the final report in 2003 (the *African Immigrant Project* [48]). The survey found that only 72/203 (35%) of respondents had ever tested for HIV, an average of 6 years prior. The survey also found that HIV stigma among those born in Africa may be even higher than among American-born persons, where stigma already is considerable.

In 2006, the *Seattle RARE* (Rapid Assessment, Response, and Evaluation) *Project* needs assessment was carried out by the Center for Multicultural Health, another partner in our CAB Working Group. Community conversations were held with African communities including Kenyans, Tanzanians, and Ugandans. Participants reported that one of the practices they felt contributes most to HIV transmission in the community is that women trust their husbands/partners too much. They said that they cannot talk openly with their husbands/partners, even when they hear or know that they are being unfaithful, because they are afraid that their husbands/ partners will leave them. Women said that, when their husbands/partners visit Africa, they have sex with other women and they do not want to get tested or practice safe sex when they return. Participants felt that community and religious leaders should be more willing to talk about HIV/AIDS. They said that gatherings like the community conversations used in the needs assessment, and that we propose in our project—would be a good way to open up discussion about HIV/AIDS. Community conversations among Ethiopian, Kenyan, and other participants acknowledged that HIV is a sensitive issue, so individuals who approach the community should be accepted and respected. It was noted that there are different types of peer groups (e.g., taxi cab drivers, soccer teams, groups that gather in apartment complexes, and groups that gather in entertainment venues such as bars) and that established national immigrant community organizations can help identify and approach these groups (social networks). Focus group participants suggested reaching community members with HIV prevention messages through health care professionals, as well as through churches/mosques, community organizations (e.g., weekly breakfasts), mutual savings groups, political organizations, and soccer clubs. They suggested reaching community members through media (billboards and posters at churches/mosques, as well as radio and television), community organizations, markets and restaurants. Participants even suggested working with travel agents to provide HIV prevention messages for men who travel back and forth between the US and home countries in Africa,[49] given that men on these trips frequently engage in risky sex with other-than-primary partners (i.e., have concurrent sexual partnerships).

Such 'community conversations' became normalized in Uganda, where people recognized early on the problem of concurrent partners. Along with launching an "ABC" campaign in the early 1990s promoting abstinence, being faithful, and condoms, Uganda also had a clever campaign featuring cows to promote the idea of 'zero grazing' (an agricultural term inspired by the zero-shaped patch created when livestock are tied to a post and allowed to eat only from a single section of grass), that is, having only one sexual partner at a time. According to the World Health Organization, the number of Ugandan men reporting ≥3 non-marital sexual partners fell from 15% to 3%[50] and Uganda's HIV prevalence declined from 15% in 1991 to 5% in 2001.[51]. Recent analysis has posited that a subsequent dilution of the concurrency/zero grazing message in



Rakai District, Uganda, courtesy of Photoshare

recent years may have contributed to a resurgence of HIV infection in Uganda.[52] Stoneburner and Low-Beer's analysis in *Science* of the Ugandan success (it was equivalent to a vaccine of 80% effectiveness) stated that it was "distinctively associated with communication…through social networks" and that its "replication will require changes in global HIV/AIDS intervention policies and their evaluation."[53]

A decline in incident HIV as well as gonorrhea recently noted among African-Americans in Florida 1999-2004 has been linked to a suggested decrease in risky sexual behaviors.[54] This also has been attributed in part to community conversations about HIV prevention[55] and utilizing person-to-person social network communication strategies, as we propose to do here for concurrency messages.

A tiny handful of HIV prevention interventions have attempted to use social networks (opinion leaders) to influence peer sexual behaviors, including the 'Many Men Many Voices' intervention[56] being used by one of our CAB partners (Seattle Black Pride), to reach black MSM. None that we could find anywhere in the literature have explicitly made clear the impact and importance of reducing concurrent sexual partnerships in order to reduce community-level HIV prevalence and incidence. This study will therefore break new ground.

5. Research Design and Methods

Our consortium represents key agencies that work with our communities of interest: African-American and African-born adults in King County. An important element of this grant proposal is capacity building in community-based participatory research for all members. In particular, our focus has been on a community-based approach where community members have been involved in every phase of the research process—from identifying the research questions, planning the research, developing the prevention messages, and evaluating the success of the research. The goal through each stage of this research is to ensure community ownership in each of the sub-projects that will focus on 1) African-Americans and 2) African-born populations (specifically, Ethiopian and Kenyan communities) in King County. As we develop each of these subprojects, the roles of and collaborations with different community organizations are expected to expand and evolve.

Conceptual Framework

Our understanding of sexual network theory will be enriched by a parallel utilization of community-based participatory research methods for health behavior change. Successful community-based participatory research depends on an ongoing, iterative exchange between academic researchers, community members, and community organizations.[57] This is true at all points in engagement, but is particularly critical when designing interventions and disseminating behavior change messages. Our approach will be to work closely and iteratively as academic and community members to identify and leverage the *relational, organizational, and media resources* that distinctively characterize the communities participating in this study.

The ongoing social networks of community members define a set of relational resources for disseminating messages regarding sexual practices. We will work within our CAB working group to identify opinion leaders within the community and to design messages that could be promulgated to other network members. The role of opinion leaders affecting change within social networks has been well documented in a number of domains[58] and has been shown to be effective in behavioral interventions aimed at enhancing sexual health.[59,60] However, we believe that the relational resources afforded by personal networks go far beyond traditional roles such as opinion leader. Weak ties and more specialized roles may be particularly important in close-knit community networks where members are concerned about unwanted visibility or disclosure, as in immigrant communities.[61] We intend to engage community members in dialogue regarding ways to reach network members who do not match the standard profile of an opinion leader, but who nevertheless play critical roles as connectors, persuaders, and information sources within the community network. In doing so, we will draw on recent multidimensional approaches to identifying influential individuals within social networks.[62]

The importance of communication organizations in community-based projects is well recognized and has been underscored by recent research demonstrating that community members with a greater number of ties to community groups have greater recall of health messages.[63] We believe that the key to mobilizing these organizational resources is via a thorough effort to identify all of the organizations whose services or functions pertain to the sexual health of the specific communities with which we will be working. Research on social marketing has emphasized that this "societal sector" approach may include a wide variety of organizations including government, churches, employers, non-profits, and community associations.[64] Community-based programs often are limited by premature closure on potential partner organizations within the community. To overcome this limitation, we will begin with an effort to characterize the organizational ecology of each specific community and then develop our project so as to include as broad a range of relevant community

organizations as possible. In doing so, we will pay particular attention to the fact that different organizations may play very different, but equally important, roles within the community.

A final set of communication resources and constraints is defined by the media preferences of community members. We know that media use differs both within and between ethnic groups.[65,66] Although media use patterns of immigrants have not been studied extensively, some research suggests that media use is heavily influenced by language proficiency and the desire to maintain cultural identity.[67,68] Our community consortium will work together to develop a series of media profiles detailing community members' preferences for and use of various media. These will be used not only to identify channels through which health messages may be disseminated, but also in the design of intervention materials that reflect community members preferences for textual, visual, linguistic, and oral materials.

Procedures

The CAB is highly interested in prevention outreach and the working group on disparities, which will continue its work, even prior to any potential award notification, to identify the potential avenues for formative research as well as social networks for sexual concurrency message development and dissemination piloting. We will also initiate Human Subjects materials and applications at the UW, in anticipation of launching our project on translating prevention science regarding the contribution of sexual networks and concurrency to HIV transmission into community action.

Specific Aim 1: Formative research to develop sexual network HIV prevention messages.

We will conduct focus group and key informant interviews with members from highly affected communities including African-American and Ethiopian and Kenyan immigrants. Methodology for doing this has been successfully implemented in King County by one of our CAB partners (Center for Multicultural Health), and will serve as a base for our recruitment and facilitation of interviews for this project.

Our CAB has discussed the fact that the epidemiology of HIV transmission in these two large population groups is different, i.e., primarily MSM transmission in the African-American community and heterosexual transmission among African-born populations (see Fig. 1c). One issue is that preponderance of the sexual network modeling literature has focused on heterosexual transmission, with limited work on bisexual "bridging" and almost none on primary MSM networks. Another issue discussed by the CAB is that in many African-American (and likely African-born) communities in the US, it is unsafe for MSM to 'come out' and to identify openly as gay, or to socialize and gather in gay venues. This necessarily means that many black MSM are hidden in the larger African-American community, and thus that HIV prevention messages must be addressed to the larger community in order to reach MSM as well as heterosexuals. Given these issues and constraints, the CAB working group decided to develop sexual concurrency messages that can resonate across a broad audience among the African-American group (March 2007). Drs. Kurth and Morris are also committed to identifying potential funding for an additional study that would focus on sexual concurrency message development and modeling work specifically for MSM.

Concurrency Message Development. To undertake concurrency message development with African-American, Ethiopian, and Kenyan men and women in King County, we will utilize staff persons who represent the target communities. These staffers may come from some of community partners or may be hired specifically for this project. This determination will be made collaboratively by the CAB group for this study.

To reach the Ethiopian and Kenyan immigrant populations, we will utilize our CAB members working in these communities, as well as the community organizations, mutual assistance associations, and faith-based social networks, with whom we will finalize our recruitment plan.

This qualitative work will be conducted in a variety of locations for different groups. CAB partners will help identify participants, provide space, and facilitate the focus groups that may include the following:

1. HIV-positive adults —BABES Network-YWCA; Project HANDLE, Black Pride, POCAAN
2. Faith-based groups (women and men)—AARTH, Covenant Missions International
3. Black MSM—Black Pride, POCAAN
4. Community as a whole—Black Leadership Council, Lifelong AIDS Alliance
5. Social venues, e.g., barbershops, salon owners
6. Ethiopian Community Mutual Association—Board includes individuals from and uses the languages of various ethnic groups, including Tigray, Oromo, Amhara and others.[69]
7. Kenyan Community Association and Refugee Women's Alliance
8. Immigrant community as a whole—Center for Multi-cultural Health, Center for Well-being of Africans in America, Cross Cultural Health Care Program

In addition, we will take a rapid-assessment approach[70] to conduct focus groups and individual interviews that are flexible and opportunity-based, e.g., at events where target population members may congregate. We will identify events that draw in members of the community (cultural events, concert venues, Seattle Black Pride summer event, etc.) and will send members of a "rapid response" research team (comprised of academics and community members) to conduct individual interviews with attendees.

An interview and topic guide will be developed to assess community knowledge about HIV transmission, sexual partnership and network patterns, and optimal message format and delivery modalities and channels. We will then 1) recruit individuals to participate in the interviews; 2) host the discussions at sites that are comfortable for participants; 3) arrange refreshments; and 4) pay participant stipends or provide other incentives for participation. This same process will be followed for Aim 2, when we pilot the concurrency messages using social-network based community conversations as well as media outlets.

We will then develop a multimedia tool that illustrates the principles of HIV transmission in sexual networks. The UW has an available infrastructure of media production facilities that can be utilized for this aim. Dr. Kurth has worked previously with social marketing firms to develop such tools in video, print, audio, and computer-delivered formats, for use in Kenya and elsewhere (see http://www.pambazuko.org/). The goal will be to come up with succinct images and 'taglines' that convey the concepts at both a conceptual and affective level. While 'zero grazing' metaphor obviously will not work in urban US settings, a cell phone or other metaphor ('you're connected to everyone!', 'don't connect the dots', etc.) might be germane. The multimedia tool will use still photo and animation images that change every few seconds, as this format is cheaper and more flexible to edit, update, and to switch out audio files in different languages. We will record audio files in English, Kiswahili, and Amharic, and provide opportunities social network contacts to incorporate the tool into community discussions. Additional materials might include T-shirts, websites, etc. that display the concurrency messages.

We will identify sexual concurrency message dissemination channels for the community conversations that deliver the sexual concurrency messages. These are expected to include person-to-person and small group communication in faith-based communities, social gathering places, and community events, as well as through community-specific radio, TV, and print media.

Specific Aim 2: Pilot and evaluate the impact of the HIV prevention concurrency messages.

We will launch HIV prevention concurrency messaging developed and refined above to the identified distribution channels, and assess impact of the messages as measured by quantified outcomes including:

- **Measures of message comprehension and recall -** Rated clarity of message, perceived usefulness of the message, rated uncertainty regarding what the main point of the message was, extent to which subjects feel that the message is providing useful information, extent to which the message is perceived as memorable at the time.
  - We will utilize a follow-up recall test in a subset of n=30 African-American, n=15 Ethiopian, and n=15 Kenyan individuals contacted 1 month after first exposure to the concurrency message.

- **Perceived impact of messaging -** on own monogamy intentions, confidence in knowledge of whether or not partner has other partners, intention to determine partners' monogamy, intention to share information with others in social network (non-partners), and partners' perceived monogamy intentions

- **Perceived impact on attitude strength -** The persistence, resistance, and impact of attitudes (i.e., their 'strength') varies with a series of related cognitive and affective states.[71] By measuring how these strength-related characteristics are affected by our messaging, we can access impact on several demonstrated precursors of behavioral change:
  - Perceived importance of avoiding or reducing concurrency [importance]
  - Extent to which subjects are certain of their attitudes toward concurrency [certainty - clarity]
  - Extent to which subjects are confident that their attitudes toward concurrency are valid, justified, or correct [certainty – correctness]
  - Extent to which subjects hold both positive and negative views of concurrency at the same time [ambivalence]
  - How often subjects report thinking about concurrency [accessibility].
  - How deeply subjects report thinking about the risks and benefits of concurrency [elaboration]

We will document all steps in our processes, such that a manual of our community-based research translation process that we utilize can be created for future dissemination. This will enhance replication and transfer of HIV prevention science to community providers, the need for which has been highlighted by Kelly.[72]

Specific Aim 3: Host a national meeting to distribute the lessons learned and tools developed from our concurrency message strategy for reducing HIV disparities. Plan for a collaborative community-based multi-site study for primary HIV prevention intervention delivery in areas with large populations of African-American and African immigrants.

We are part of an existing cross-Center for AIDS Research network of sociobehavioral cores, some of which have their own CABs with whom community-based participatory research takes place. We will invite representatives from these entities to come to a workshop in Seattle at the end of year two of this project. We will also simultaneously webcast this meeting so that the participation will not be constrained by resources. We will hold this seminar following the same format as our local March 2007 disparities seminar: morning sessions focusing on the results, afternoon on breakout sessions with both national CFAR core members and their corresponding CAB members. This will allow us the opportunity to talk about the potential for scaling up the concurrency message approach as an HIV prevention intervention that could be evaluated in multiple sites that have large populations of African-American and African-born immigrant populations. The national meeting would allow us to establish the community-based participatory framework and organizational structure for doing this if it appears that there is community consensus that this would be both fruitful and scientifically valid. If the sexual concurrency messages are found to be potentially efficacious for a multi-site randomized controlled trial, we can begin to plan the protocol. In such a multi-site study we could utilize audio computer-assisted self-interviews to collect social and sexual network data to further explicate patterns. The study could also assess the impact of a sexual concurrency HIV prevention intervention on self-reported HIV/STI risk behaviors, and on bacterial STI incidence (biomarker and behavioral outcomes).

CAB Working Group Partnership Development

As delineated in project SubAims 2.1.1. and 2.2.1, an expected outcome of this participatory research approach is the mutually beneficial exchange of information and methodologies for CAB members (including junior researchers) and organizations. It has been pointed out that reduction of disparities in HIV in the US necessitates support of minority researchers, who are well-positioned to address gaps in the black community.[73] This exchange will take place experientially via the work involved in the study aims (e.g., formative message development, pilot test, evaluation). Also, we will continue to foster our own development in this community-academic partnership by having regular brown bag meetings regarding best practices for:

- Qualitative research methods (a training that will be sponsored by the CFAR Sociobehavioral and Prevention Research Core in Fall 2007)
- Science involved in sexual network explanations
- Health communication and social marketing methodologies, with support from the UW Health Marketing and Communication Research Center
- Community-based participatory research, meeting with experts such as Dr. Bonnie Duran (the UW Indigenous Wellness Center), Dr. Bobbie Berkowitz (Director, UW Center for the Advancement of Health Disparities Research, on the 'community collaboration' model), colleagues from the UCSF Center for AIDS Prevention Studies,[74] and exploring methodologies that draw from community strengths such as the asset-based community development approach[75]

Analyses

Data Collection. Formative phase data from Aim 1 activities will be digitally recorded using MP3 devices with microphones, then transcribed. Extensive field notes also will be written immediately following key informant interviews and focus group session to facilitate rapid assessment of emerging themes and elements. Transcripts and field note data will be coded using qualitative software (Atlas.ti)

Aim 2 concurrency message impact measures will be collected using a mixed method approach of staff-administered open-ended interviews as well as participant-administered audio-computer-assisted interview on a personal digital assistant (PDA). Information technologies such as personal digital assistants (PDAs, small handheld computers) are being used for HIV and other STI surveys, prevention, and treatment support.[76] Computers have been used successfully by African populations for HIV risk assessment (Kenya,[77,78,79,80,81] Zimbabwe[82]). These health communication technologies have the advantage of collecting behavioral data with consistent fidelity and reducing social desirability bias.[83] Dr. Kurth has developed a PDA survey tool that is

being used in Peru in Spanish and will be tested in Kenya in Kiswahili; see: http://www.colectapalm.org/. Content and languages for audio files could be readily adapted in this PDA survey platform for concurrency message impact measurement.

Data Analysis. The Aim 1 qualitative data will be reviewed separately by at least two investigators for text element and key word coding and initial generation of themes. The same research staff and a third staffer will then collaborate to develop an agreed-upon coding scheme. This will become the coding template to identify and organize the overarching themes for development of the concurrency messages and multimedia tool. This multiple coding[84] ensures the qualitative analog of inter-rater reliability.[85]

Data Interpretation. A modified member check will be done by presenting initial formative phase data results back to members of the CAB and to key informants in the target populations to confirm that our assessment of them and message development are congruent and resonant with the target communities. Analysis of the concurrency message impact data (interviews and PDA questionnaire) will be conducted using descriptive analytic methods.

Data-sharing Plan. All thematic findings from the formative phase will be posted on the Center for AIDS & STDs and CAB website. The concurrency messaging tools and community participatory research manual developed as part of this study will be made freely available for downloading on that site.

Novel Concepts and Tools

The work proposed here combines an excellent community-academic partnership with cutting edge network methodologies and science in the development and delivery of messages that will convey the importance of sexual networks as a contributor to the disproportionate impact of HIV in African-American and foreign-born African communities. Development of epidemiologically potent, culturally-resonant messages and multimedia tools resulting from this study could be widely scaled up for primary HIV prevention intervention delivery in settings across the US that have significant populations of African-Americans (as well as higher prevalence of HIV, such as in the southern and eastern seaboard states) and of East African immigrants (e.g., Minneapolis, Philadelphia, etc.)

Potential Difficulties and Limitations of the Proposed Procedures & Alternative Approaches

Community recruitment will be conducted iteratively, as no single approach is guaranteed to assure access. However our CAB is committed to maintaining this kind of flexibility. In terms of the CAB process itself, members of our team have experience in mediating relationships between academic researchers and community members. (The fact that these collaborations can develop problems is acknowledged in the literature.[86]) We fully expect that our reliance on well-established community-based participatory research principles will minimize the need for any such mediation.

Timetable

HIV Disparities Study Tasks/Milestones	**6 to 9/07**	**9 to 12/07**	**1 to 3/08**	**4 to 6/08**	**7 to 9/08**	**10 to 12/08**	**1 to 3/09**	**4 to 6/09**	**7 to 9/09**
CAB work continues, preparatory to funding start									
Human subjects submission	X								
AIM 1									
Formative interviews, focus groups		X	X						
Analysis, concurrency message development			X						
Create multimedia tool & other 'message' support			X						
Identify message dissemination channels				X					
CAB education / seminars	X	X	X	X	X	X	X	X	X
AIM 2									
Concurrency message piloting & evaluation						X	X	X	
AIM 3									
Analysis								X	X
National Meeting, multisite intervention proposal exploration									

8. Protection of Human Subjects

All study procedures will be finalized through a consensus review process within our CAB HIV Disparities Working Group. We will then obtain Human Subjects approval from the University of Washington before contacting any human subjects. If any of our partner organizations require further human subjects review from any entity other than the UW, we will also submit to those entities for simultaneous and coordinated review.

Subject Involvement and Characteristics

A sample of at least 120 men and women, all of whom will be at least 18 years of age and not psychotic or demented, will be involved in the study as research participants: 60 in the Aim 1 formative research phase (30 African-American, 15 Ethiopian, and 15 Kenyan participants), and 60 in the concurrency message testing phase, (30 African-American, 15 Ethiopian, and 15 Kenyan participants).

Sources of Materials

Data will be collected through in-depth qualitative interviews, focus groups, and use of the PDA survey tool. For the in-depth interviews, focus groups and message testing, no personally identifying information will need to be collected.

Adequacy of Protection Against Risks

Recruitment and Informed Consent

Participants will be recruited from the CAB member social networks, civil events and venues in neighborhoods in King County with higher proportions of African-American, Ethiopian, and Kenyan residents. All participants will give informed consent before any data are collected or study procedure is undertaken. Study staff will explain the purpose of each study phase, and undertake the informed consent procedure. Participants will be paid for their time, at a level determined by the CAB Working Group (it is expected to be approximately $20).

Potential Risks

Physical and psychological risks of this community-collaborative study are expected to be minimal, as no medical/surgical or pharmacologic procedures are planned. Nevertheless we consider the possible risks and appropriate responses to minimize those risks, below.

Protection Against Risk. No physical risks are expected related to any study procedure. Psychological impact likewise is not expected, although any mental stress identified in the course of the study (such as depression or intimate partner violence) will be followed up appropriately, with counseling services available through Seattle area clinics. Loss of confidentiality. All records for this study will be kept locked in the UW PI's office. Databases will be password protected to maintain confidentiality of patient records. All study procedures will be conducted in a private space where available in the community settings, to maximize confidentiality.

Potential Benefits of the Proposed Research to Participants and Others

Participants will gain the advantage of receiving information on HIV transmission and risk reduction, which could have a powerful impact on their own health as well as the health of their sexual partners and families.

Importance of the Knowledge to be Gained

This study is expected to provide new and crucial information how best to deliver culturally-relevant HIV prevention messages with a novel understanding of factors driving the disproportionate impact of HIV in African-American and African-born populations.

9. Inclusion of Women and Minorities

Women as well as men, and persons of African descent will be included, given the study focus.

10. Targeted/Planned Enrollment Table

Study Title: "Reducing HIV Disparities"

Total Planned Enrollment: Aim 1, n ≥ 60 participants (interviews/groups); Aim 2, n ≥ 60 message testing

TARGETED/PLANNED ENROLLMENT: Number of Subjects			
Ethnic Category	**Sex/Gender**		
	Females	**Males**	**Total**

Hispanic or Latino	0	0	0
Not Hispanic or Latino	60	60	120
Ethnic Category: Total of All Subjects *			
Racial Categories			
American Indian/Alaska Native	0	0	0
Asian	0	0	0
Native Hawaiian or Other Pacific Islander	0	0	0
Black or African-American	60	60	120
White (includes Hispanic)	0	0	0
Racial Categories: Total of All Subjects *	60	60	120

* The “Ethnic Category: Total of All Subjects” must be equal to the “Racial Categories: Total of All Subjects.”

11. Inclusion of Children

Only adults ages ≥18 will be enrolled, as adolescent sexual networks are likely to have different dynamics, HIV prevention messaging needs, and distribution mechanisms, which are beyond the scope of this grant.

14. Multiple PD/PI Leadership Plan

This project utilizes a community-academic partnership established through the UW Center for AIDS & STDs CAB. The UW serves as the applicant agency since it is the entity through which the CAB functions. There are a variety of resources and institutional supports at the UW for community participation in research, upon which we will draw for this project. These include principles of community-campus partnerships that were originally outlined at the UW in 1998 and refined last year by the Community-Campus Partnerships for Health (CCPH). CCPH is housed at the UW and is a nonprofit organization and network of over 1,300 communities and campuses that collaborate to promote health through community-based participatory research and other partnership strategies. The UW also has a UW-Community Partnerships office that supports a number of health-related projects, and whose mission is to expand “the ways in which the University works with diverse communities—in Seattle, the region, and internationally —broadening access to university research and education expertise, and creating new opportunities for community-based research and learning.”[87]

The CAB provides overall leadership for this project, via working group membership focused on reduction of HIV disparities and translation of prevention science into community action. On the community side leadership is provided through the CAB co-chairs Steven Wakefield and Tina Podlodowski. On the academic side Ann Kurth, CNM, PhD serves as principal investigator, with administrative and scientific responsibilities for the project. Procedures for decision-making, resource allocation, and communications are being determined through the CAB now, both for this project as well as any others that are defined by the CAB as worthy community-academic partnership priorities. These will be agreed upon by consensus, and archived for available access on the CFAS website. All key personnel involved will provide expertise on academic-community partnerships, will ensure community participation in all phases of the project, and will provide leadership on communication, decision-making, and conflict resolution processes. The resources requested for this project are distributed equally (~50% of the total budget to each) between community partners and academic partners/UW administrative activities.

15. **Consortium/Contractual Arrangements**

A subcontract has been generated with the Fred Hutchison Cancer Research Center, for Steve Wakefield’s time and effort in the CAB Disparities Working Group for this project.

16. **Letters of Support**

Attached.

17. **Resource Sharing Plan(s)**
In-kind contributions will be made for this project from both community partners (Working Group member time, agency access, and potential financial support from Lifelong AIDS Alliance and Project HANDLE for CAB-related HIV prevention and outreach activities involved in the concurrency message development. The academic partner (UW) likewise is contributing in-kind support in the form of Dr. Bob Wood's time, as Associate Director of the CFAR Sociobehavioral and Prevention Research Core.
CAB co-chair Tina Podlodowski is donating her time on this project, and co-chair Steve Wakefield also is donating 5% of his time as well.

18. **Appendix**
Please see the urls for the following supportive materials.

Appendix 1 - Community-participatory principles
http://depts.washington.edu/ccph/principles.html#principles

Appendix 2 - Morris article(s)
"Concurrent Partnerships and the Spread of HIV", *AIDS*, 11, 641–648
http://www.aidsonline.com/pt/re/aids/fulltext.00002030-199705000-00012.htm;jsessionid=GDgdl2Mmvtppz08SCfQ1VDhHD8Xp0LhnKL9KG1KW3MwTYCtGtnT2!-1870145763!-949856144!8091!-1

"Prevalence of HIV Infection Among Young Adults in the United States: Results From the Add Health Study"
American Journal of Public Health, 96, 1091–1097
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=16670236&itool=iconabstr&query_hl=6&itool=pubmed_DocSum

or

http://www.ajph.org/cgi/content/full/96/6/1091

Appendix 3 - African Immigrant Project Report
http://metrokc.gov/health/apu/publications/African-Immigrant-Project.pdf

Appendix 4 - Seattle RARE Report
http://metrokc.gov/health/apu/publications/rare/index.htm

[1] Halperin DT, Epstein H. Concurrent sexual partnerships help to explain Africa's high HIV prevalence: implications for prevention. *Lancet.* Jul 3-9 2004;364(9428):4-6.
[2] Hicks KE, Allen JA, Wright EM. Building holistic HIV/AIDS responses in African American urban faith communities: a qualitative, multiple case study analysis. *Fam Community Health.* Apr-Jun 2005;28(2):184-205.
[3] Hallfors DD, Iritani BJ, Miller WC, Bauer DJ. Sexual and drug behavior patterns and HIV and STD racial disparities: the need for new directions. *Am J Public Health.* Jan 2007;97(1):125-132.
[4] Racial/ethnic disparities in diagnoses of HIV/AIDS--33 states, 2001-2005. *MMWR Morb Mortal Wkly Rep.* Mar 9 2007;56(9):189-193.
[5] Adimora AA, Schoenbach VJ. Social context, sexual networks, and racial disparities in rates of sexually transmitted infections. *J Infect Dis.* Feb 1 2005;191 Suppl 1:S115-122.
[6] Blankenship KM, Smoyer AB, Bray SJ, Mattocks K. Black-white disparities in HIV/AIDS: the role of drug policy and the corrections system. *J Health Care Poor Underserved.* Nov 2005;16(4 Suppl B):140-156.
[7] Adimora AA, Schoenbach VJ, Martinson F, Donaldson KH, Stancil TR, Fullilove RE. Concurrent sexual partnerships among African Americans in the rural south. *Ann Epidemiol.* Mar 2004;14(3):155-160.
[8] Adimora AA, Schoenbach VJ, Bonas DM, Martinson FE, Donaldson KH, Stancil TR. Concurrent sexual partnerships among women in the United States. *Epidemiology.* May 2002;13(3):320-327.
[9] Adimora AA, Schoenbach VJ, Doherty IA. HIV and African Americans in the southern United States: sexual networks and social context. *Sex Transm Dis.* Jul 2006;33(7 Suppl):S39-45.
[10] Public Health Seattle & King County (PHSKC)> HIV Surveillance Report 2006. PHSKC: Seattle, 2006.
[11] Sides TL, Akinsete O, Henry K, Wotton JT, Carr PW, Bartkus J. HIV-1 subtype diversity in Minnesota. *J Infect Dis.* Jul 1 2005;192(1):37-45.
[12] Harawa NT, Bingham TA, Cochran SD, Greenland S, Cunningham WE. HIV prevalence among foreign- and US-born clients of public STD clinics. *Am J Public Health.* Dec 2002;92(12):1958-1963.
[13] Morris M, Goodreau S, Moody J. Sexual networks, concurrency, and STD/HIV. Chapter in Holmes et al, *Sexually transmited diseases*, 4th edition. NY: McGraw-Hill; 2007
[14] Koopman J, Simon C, Jacquez J, Joseph J, Sattenspiel L, Park T. Sexual partner selectiveness effects on homosexual HIV transmission dynamics. J Acquir Immune Defic Syndr 1988;1:486-504.
[15] Morris M, Kretzschmar M. Concurrent partnerships and the spread of HIV. Aids 1997;11:641-8.
[16] Potterat JJ, Muth SQ, Brody S. Evidence undermining the adequacy of the HIV reproduction number formula. Sex Transm Dis 2000;27:644-5.
[17] Hankins C. Changes in patterns of risk. AIDS Care 1998;10 Suppl 2:S147-53.
[18] Finer LB, Darroch JE, Singh S. Sexual partnership patterns as a behavioral risk factor for sexually transmitted diseases. Fam Plann Perspect 1999;31:228-36.
[19] Manhart LE, Aral SO, Holmes KK, Foxman B. Sex partner concurrency: measurement, prevalence, and correlates among urban 18-39-year-olds. *Sex Transm Dis.* Mar 2002;29(3):133-143.
[20] Gorbach PM, Aral SO, Celum C, et al. To notify or not to notify: STD patients' perspectives of partner notification in Seattle. Sex Transm Dis 2000;27:193-200.
[21] Laumann EO, Youm Y. Racial/Ethnic Group Differences in the Prevalence of Sexually Transmitted Diseases in the United States: A Network Explanation. Sexually Transmitted Diseases 1999;26(5):250-261.
[22] Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance, 2004. Atlanta, GA: U.S. Department of Health and Human Services; 2005 September 2005.
[23] Martina Morris, Mark S Handcock, William C Miller, Carol A Ford, et al. (2006). Prevalence of HIV Infection Among Young Adults in the United States: Results From the Add Health Study. American Journal of Public Health, 96, 1091-1097.
[24] Ellen J, Kohn R, Bolan G, Shiboski S, Krieger N. Socioeconomic differences in sexually transmitted disease rates among black and white adolescents, San Francisco, 1990 to 1992. American Journal of Public Health 1995;85:1546-1548.
[25] Ellen J, Aral S, Madger L. Do differences in sexual behaviors account for the racial/ethnic differences in adolescents' self-reported history of a sexually transmitted disease? Sexually Transmitted Diseases 1998;25:125-9.
[26] King County Bar Association Drug Policy Project Task Force on Racial and Class Disparities; report by the Sentencing Guidelines Commission. http://www.kcba.org/ScriptContent/KCBA/druglaw/race.cfm, accessed 4/15/07.
[27] Fang J, Madhavan S, Cohen H, Alderman MH. Differential mortality in New York City (1988-1992). Part One: excess mortality among non-Hispanic blacks. *Bull N Y Acad Med.* Winter 1995;72(2):470-482.
[28] Obiri GU, Fordyce EJ, Singh TP, Forlenza S. Effect of HIV/AIDS versus other causes of death on premature mortality in New York City, 1983-1994. Am J Epidemiol. 1998;147(9):840-845.
[29] Michaels S. Integrating quantitative and qualitative methods in the study of sexuality. In: Researching sexual behavior 1999; Rothenberg R, Narramore J. The relevance of social network concepts to sexually transmitted disease control. Sex Transm Dis 1996;23:24-9.
[30] Gorbach, PM, Stoner BP, Aral SO, H Whittington WL, Holmes KK. "It takes a village": understanding concurrent sexual partnerships in Seattle, Washington.

Sexually Transmitted Disease, 2002 Aug;29(8):453-62.
[31] Golden M, Morris M, Jones J, Whittington WLH, Handsfield HH, Hogben M, Holmes KKH. Ethnicity associated sexual network patterns among persons with genital chlamydial infections. Manuscript in preparation.
[32] http://depts.washington.edu/ccph/principles.html#principles, accessed 4/2/07.
[33] Johnson R, Raphael, S. The effects of male incarceration dynamics on AIDS infection rates among African-American women and men. Accessed from http://socrates.berkeley.edu/~ruckerj/johnson_raphael_prison-AIDSpaper6-06.pdf, accessed 5/7/07.
[34] Peterman TA, Lindsey CA, Selik RM. This place is killing me: a comparison of counties where the incidence rates of AIDS increased the most and the least. *J Infect Dis.* Feb 1 2005;191 Suppl 1:S123-126.
[35] Thomas JC, Torrone E. Incarceration as forced migration: effects on selected community health outcomes. *Am J Public Health.* Oct 2006;96(10):1762-1765.
[36]Jones KT, Johnson WD, Wheeler DP, Gray P, Foust E, Gaiter J. Nonsupportive Peer Norms and Incarceration as HIV Risk Correlates for Young Black Men who have Sex with Men. *AIDS Behav.* Apr 10 2007.
[37] Doherty IA, Leone PA, Aral SO. Social determinants of HIV infection in the Deep South. *Am J Public Health.* Mar 2007;97(3):391; author reply 391-392.
[38] Farley TA. Sexually transmitted diseases in the Southeastern United States: location, race, and social context. *Sex Transm Dis.* Jul 2006;33(7 Suppl):S58-64.
[39] Potterat JJ, Zimmerman-Rogers H, Muth SQ, et al. Chlamydia transmission: concurrency, reproduction number, and the epidemic trajectory. Am J Epidemiol 1999;150:1331-9.
[40] Laumann & Youm, 1999: Table 4, p 255.
[41] Rosenberg MD, Gurvey JE, Adler N, Dunlop MB, Ellen JM. Concurrent sex partners and risk for sexually transmitted diseases among adolescents. Sex Transm Dis 1999;26:208-12.
[42] Daker-White G, Barlow D. Heterosexual gonorrhoea at St Thomas'--II: Sexual behaviour and sources of infection. Int J STD AIDS 1997;8:102-8.
[43] Manhart, Aral, Foxman, 2002 *op cit.*
[44] Morris & Kretzschmar 2001, *op cit.*
[45] Potterat JJ, Rothenberg RB, Muth SQ. Network structural dynamics and infectious disease propagation. Int J STD AIDS 1999;10:182-5.
[46] Ghani AC, Garnett GP. Risks of acquiring and transmitting sexually transmitted diseases in sexual partner networks. Sex Transm Dis 2000;27:579-87.
[47] Moody J. The importance of relationship timing for diffusion. SOCIAL FORCES 2002;81(1):25-56.
[48] See RARE survey report at http://metrokc.gov/health/apu/publications/rare/index.htm.
[49] Public Health Seattle & King County (PHSKC). African Immigrant Survey. Seattle: PHSKC, 2003. http://metrokc.gov/health/apu/publications/African-Immigrant-Project.pdf
[50] Bessinger R, Akwara P, Halperin D (2003) Sexual behavior, HIV and fertility trends: A comparative analysis of six countries. Phase I of the ABC study. Measure Evaluation, USAID. Available: http://www.cpc.unc.edu/measure/publications/pdf/sr-03-21b.pdf, accessed May 5th 2007.
[51] Murphy EM, Greene ME, Mihailovic A, Olupot-Olupot P. Was the "ABC" approach (abstinence, being faithful, using condoms) responsible for Uganda's decline in HIV? PLoS Med. 2006 Sep;3(9):e379.
[52] Timberg C. Uganda's Early Gains Against HIV Eroding. Washington Post Foreign Service, Thursday, March 29, 2007.
[53] Stoneburner RL, Low-Beer D. Population-level HIV declines and behavioral risk avoidance in Uganda. *Science.* Apr 30 2004;304(5671):714-718.
[54] HIV/AIDS Diagnoses Among Blacks--Florida, 1999-2004. JAMA 2007 297: 1185-1186
[55] AP. New HIV cases decline again in South Florida. South Florida Sun-Sentinel. March 18, 2007
[56] http://www.effectiveinterventions.org/go/interventions/many-men-many-voices, accessed 5/1/07.
[57] O'Fallon, L, Tyson F, Dearry A. (ed.) Successful models of community based participatory research. Research Triangle Park NC: National Institute of Environmental Health Sciences, 2000.
[58] Rogers, E. Diffusion of Innovation (5th ed.). New York: Simon & Schuster, 2003.
[59] Celentano, D., Bond, KC, Lyles, CM, Eiumtrakul, S, Go, VFL, Beyrer, C, Chiangmai, C, Nelson, KE., Khamboonruang, C, & Vaddhanaphuti, C. Preventive intervention to reduce sexually transmitted infections: A field trial in the royal Thai army. Archives of Internal Medicine, 2000,160, 535-540.
[60] Kelly, JA, St. Lawrence, JS, Stevenson, LY., Hauth, AC, Kalichman, SC, Diaz, YE, Brasfield, TL, Koob, JJ, & Morgan, MG (1992). Community AIDS/HIV risk reduction: The effects of endorsements of popular people in three cities. American Journal of Public Health, 1992, 82, 1483-1489.
[61] Parks, MR. Personal relationships and personal networks. Mahwah NJ: Lawrence Erlbaum Associates; 2007.
[62] Boster, FJ, Andrews, KR, & Kotowski, MR. Identifying influentials: Development and validation of the connector, persuader, and maven scales. Presentation, National Communication Association. San Antonio TX. November, 2006.
[63] Viswanath, K, Steele, WR, & Finnegan, JR. Social capital and health: Civic engagement, community size, and recall of health messages. American Journal of Public Health, 2006, 96, 1456-1461.

[64] Dearing, JW, Maibach, EW, & Buller, DB. A convergent diffusion and social marketing approach for disseminating proven approaches to physical activity promotion. American Journal of Preventive Medicine, 2006, 31, S11-S23
[65] Beaudoin, CE, & Thorson, E. The social capital of blacks and whites: Differing effects of the mass media in the United States. Human Communication Research, 2006, 32,157-177.
[66] Jeffres, LW. Ethnicity and ethnic media use. Communication Research, 2000, 27, 496-536
[67] Lum, CMK. Communication and cultural insularity: The Chinese immigrant experience. Critical Studies in Mass Communication, 1991, 8, 91-101.
[68] Sunoo, DH, Trotter, EP, & Aames, RL. Media use and learning of English by immigrants. Journalism Quarterly, 1980, 57, 330-333.
[69] http://ethnomed.org/ethnomed/cultures/somali/somali.html, accessed 4/28/07.
[70] Scrimshaw SC, Carballo M, Ramos L, Blair BA. The AIDS rapid anthropological assessment procedures: a tool for health education planning and evaluation. *Health Educ Q* 1991; 18:111-123.
[71] Visser, P. S., Bizer, G. Y., & Krosnick, J. A. (2006). Exploring the latent structure of strength-related attitude attributes. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38, pp. 1-67). New York:: Academic
[72]Kelly JA, Somlai AM, DiFranceisco WJ, et al. Bridging the gap between the science and service of HIV prevention: transferring effective research-based HIV prevention interventions to community AIDS service providers. *Am J Public Health.* Jul 2000;90(7):1082-1088.
[73] Fitzpatrick LK, Sutton M, Greenberg AE. Toward eliminating health disparities in HIV/AIDS: the importance of the minority investigator in addressing scientific gaps in Black and Latino communities. *J Natl Med Assoc.* Dec 2006;98(12):1906-1911.
[74] Sanstad KH, Stall R, Goldstein E, Everett W, Brousseau R. Collaborative community research consortium: a model for HIV prevention. *Health Educ Behav.* Apr 1999;26(2):171-184.
[75] McKnight, JL. Rationale for a community approach to health improvement. Pp. 13-18 in TA Bruce & SU McKane (eds.). Community-based public health: A partnership model. Washington DC: American Public Health Association, 2000.
76 Curioso W, Kurth A, Blas M, Klausner J. Information technology and HIV/STIs. Holmes et al., ed. STD. Vol 4; 2007.
77 Waruru AK, Nduati R, Tylleskar T. Audio computer-assisted self-interviewing (ACASI) may avert socially desirable responses about infant feeding in the context of HIV. BMC Med Inform Decis Mak. 2005 Aug 2;5:24.
78 Mensch BS, Hewett PC, Erulkar AS. The reporting of sensitive behavior by adolescents: a methodological experiment in Kenya. Demography. 2003 May;40(2):247-68.
79 Hewett PC, Mensch BS, Erulkar. Consistency in the Reporting of Sexual Behaviour by Adolescent Girls in Kenya: A Comparison of Interviewing Methods. Sex Transm Infect 2004;80(Suppl II):ii43-ii48.
80 Hewett PC, Mensch BS, Erulkar AS. The Feasibility of Computer-Assisted Survey Interviewing in Africa: Experience from two Rural Districts in Kenya. Social Science Computer Review. 2004;22:319-334.
81 KEMRI Clinic, Kilifi District uses tablet computer ACASI (Elise van der Elst personal communication 24 March 2006).
82 van De Wijgert J, Padian N, Shiboski S, Turner C. Is audio computer-assisted self-interviewing a feasible method of surveying in Zimbabwe? Int J Epidemiol. 2000;29(5):885-890.
[83] Wantland DJ, Portillo CJ, Holzemer WL, Slaughter R, McGhee EM. The effectiveness of Web-based vs. non-Web-based interventions: a meta-analysis of behavioral change outcomes. *J Med Internet Res.* Nov 10 2004;6(4):e40.
[84] Barbour RS. Checklists for improving rigour in qualitative research: a case of the tail wagging the dog? *Bmj* 2001;322:1115-7.
[85] Mays N, Pope C. Rigour and qualitative research. Bmj 1995;311:109-12.
[86] Backer, TE. Evaluating community collaborations. New York: Springer; 2003
[87] See https://devar.washington.edu/howto/storydb/project/story_results.asp?FromDay=1&FromMonth=1&FromYear=2001&ToDay=31&ToMonth=12&ToYear=2006&Themes=HEA&WordSearch=&Submit=Search?nav=themes&subnav=health, accessed 4/2/07.