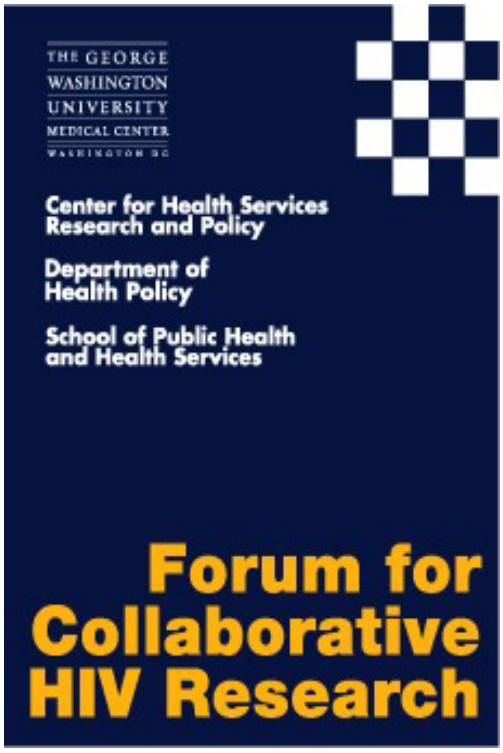


Report of the Workshop:

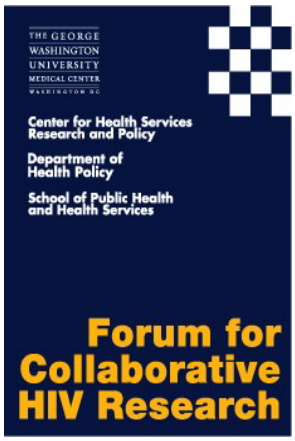
Sex and Gender Issues in HIV Disease

Forum for Collaborative HIV Research

November 4&5, 2002

Washington DC

www.hivforum.org



Acknowledgments

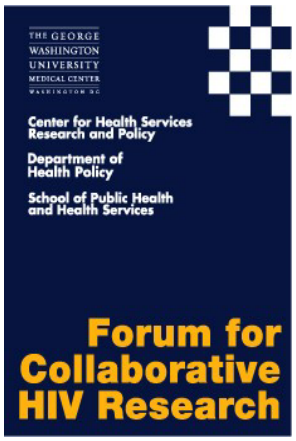
This report summarizes the discussions held at the "Sex and Gender Issues in HIV Disease" workshop held on November 4-5, 2002 in Washington, D.C. We are deeply grateful to the co-chairs for this project, Sherry Marts and Gina Brown, whose vision and leadership inspired the project.

The Forum would like to thank the Office of AIDS Research, National Institutes of Health and the Division of HIV/AIDS Prevention, Centers of Disease Control and Prevention for supporting this project with a project specific grant. Special thanks go to Judy Auerbach[a] from the Office of AIDS Research for her insight and support for this workshop.

The planning committee members provided indispensable guidance; we thank them for their commitment of time and expertise to this project. Their names are listed in Appendix A. We are also especially grateful for the contribution of the speakers and moderators. Please see the Agenda (Appendix B) for a full list. Finally, the success of the workshop depended on the active participation of each of the participants (Appendix C) – we thank all of them for the contributions of questions, ideas, experience and support.

A special thank you goes to the project manager for this project, Blaine Parrish and the project coordinator, Ipsita Das. Additional support was provided by Paul Oh and Houtan Mova. Without their expert coordination and support, the project would not have become a reality.

[a] Currently at AmFAR.



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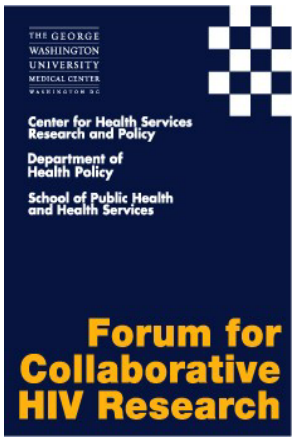
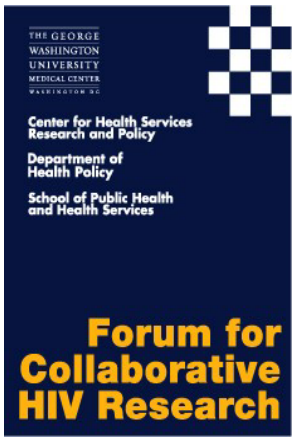


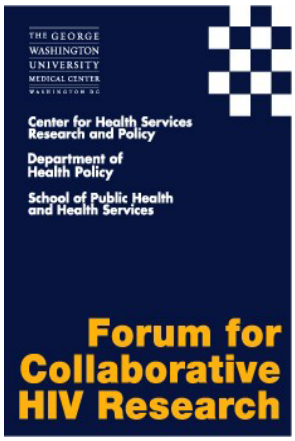


Executive Summary

The HIV/AIDS pandemic affects men, women, adolescents and children of every race, ethnicity, and socio-cultural background. By far the greatest burden of the epidemic is faced by the developing world; worldwide 19.2 million women are infected, out of a total of 38.6 million adults (42 million individuals including children). Domestically, women accounted for 20% of the adult population with AIDS in 1999, the major burden borne by African American and Hispanic women. During 1999-2000, women represented 29.5% of individuals diagnosed with HIV infection in the 29 HIV-reporting states of the USA. These statistics highlight the need for a better understanding of how the biomedical aspects of sex and the socio-cultural determined gender intersect and/or interact in all stages of HIV disease.

The Forum for Collaborative HIV Research, an independent organization representing all stakeholders and funded by government and industry, convened a group of interdisciplinary experts representing government, academia, advocacy and industry in an effort to develop a research agenda for Sex and Gender Issues in HIV Disease. Funding assistance for this workshop was received from the Office of AIDS Research, National Institutes of Health and the Division of HIV/AIDS Prevention, Centers of Disease Control and Prevention. The task for this interdisciplinary gathering of experts was to discuss what is known about sex and gender in the HIV setting, how these two concepts interact and/or intersect, and to develop an integrated research agenda.

Sex and gender are two concepts that are closely related, yet distinct. While sex is a reflection of reproductive function assigned by the chromosome complement, gender is a person's self-representation as male or female, how that person is responded to by social institutions on the basis of the individual's gender presentation or the array of societal beliefs, norms, customs and practices that



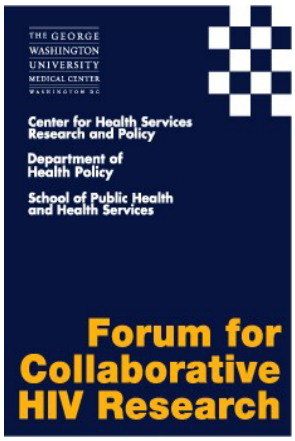
define "masculine" and "feminine" attributes and behavior. Although usually referred in binary terms, both of these concepts in actuality represent a continuum.

Sex and gender affect HIV/AIDS at nearly every level, including vulnerability to infection, stigma (as it pertains to sex, gender and HIV status), prevention behaviors, natural progression and disease manifestation, response to vaccines, access to treatment, pharmacology and treatment response. Sex and gender will determine vulnerability to infection where socio-cultural factors (e.g. lack of skills or opportunity to negotiate the incidence and nature of sexual intercourse) are compounded by physiological factors rendering young girls more prone to infection. Men may be more vulnerable to infection due to societal attitudes of what men should know, compounded by stigma associated with sexual orientation. Other areas include hormonal and other forms of contraception and its impact on transmission, infection, natural course of disease as well as treatment response.

Biological sex differences relevant to HIV have been described. Men and women respond differently to vaccines both in terms of immune response as well as adverse reactions. The relationship between viral load and disease progression differs between women and men: Women have lower viral loads than men early in disease, yet no difference in disease progression has been detected. Men and women experience drug-related toxicities differently; for example, women are more prone to experience rash, liver toxicity and lactic acidosis.

Participants identified key research questions from an interdisciplinary perspective within basic science, clinical science, health services research and behavioral research. These can be summarized as follows:

- Integration of basic science into clinical science
    - Integrate sex/gender specific questions into clinical trials up front
    - Establish adequate funding and support for infrastructure

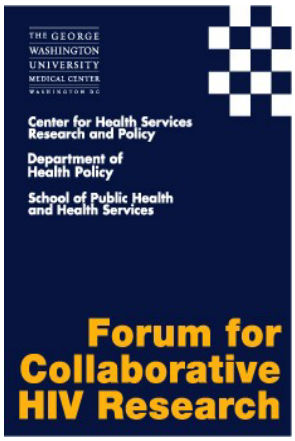


- Integration of behavioral and social sciences and clinical science
    - Identify and separate out the behavioral impact on biological and clinical findings
    - Develop predictive models for gender differences
    - Develop regulatory guidance on gender-specific data
    - Integrate community participation

Overarching themes to support cross-disciplinary and transdisciplinary research included the need to define sex and gender, and to identify gender roles. This necessitates the standardization of definitions and measurements for current and new surveillance and epidemiological studies. An extension of this is the need to assess the extent of the transgender population, and the HIV burden therein; and to understand the role of external factors and choice in "gender" dichotomy of transgender individuals.

Four major areas (not exclusive) with research gaps related to sex and gender were identified: HIV and hormones, vaccines, measuring gender and health services research.

Need to set up a systematic research program to study interactions of hormones, HIV infection, treatment(s), metabolisms, gender and lifestyle was a major recommendation for the HIV and hormones research area. Such a program needs to be incorporated into national and international structures (e.g. Women's Interagency HIV Study [WIHS], Multicenter AIDS Cohort Study [MACS], AIDS Clinical Trials Group [ACTG], Centers for Disease Control and Prevention [CDC] programs, World Health Organization [WHO] programs, etc) and requires education of endocrinologists, other health care providers as well as the health industry regarding the effect of exogenous hormones on HIV positive individuals. Seven interdisciplinary perspectives were identified to be included in such a program: fertility and fecundity; hormones and HIV acquisition; hormones and

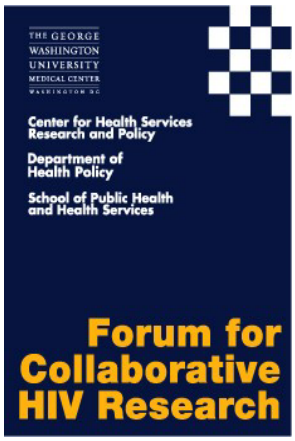


natural history; hormones and HIV transmission; hormones and HIV treatment; HIV and reproductive technology; hormonal therapy and HIV.

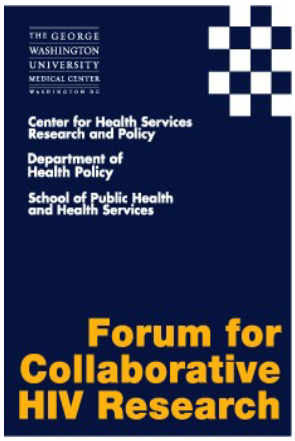
Develop leadership for a coordinated, interdisciplinary approach to vaccine development and strategy with a broad discussion platform was identified as the major recommendation for vaccine research. An interdisciplinary approach will include social scientists, behavioral scientist, immunologists, virologists, prevention researchers, microbicide researchers, etc. Strong partnerships with advocacy and community groups working on issues such as stigma and prevention are required. Clinical trials need to be designed with sufficient power to assess sex and gender based differences. These differences may range from biologic to the risk/benefit ratios of vaccine trial participation. An integrated research agenda will include the study of the interaction of sex, gender, race, socio-economic category, age, risk category, etc in vaccine research. These parameters should be extended specifically to vaccine trials in children and adolescents.

The major challenge for measuring gender is the *development of tools for measuring gender in HIV studies*. These include gender attitudes towards HIV issues, the extent of the gender structures operating for an individual in his/her cultural settings, and the extent to which an individual feels she/he has control over life, situations, and sexual behavior.

The most relevant aspect for health services research is *understanding the power dynamic from the perspective of those who have it and those who don't*. Sex and gender specific health services research will require the development of adequate language for gender research, defining the relationship between different stressors and HIV-risk behavior among different gender groups, identifying the right questions to ask, and developing mechanisms for reaching men and women who are not in the care system.



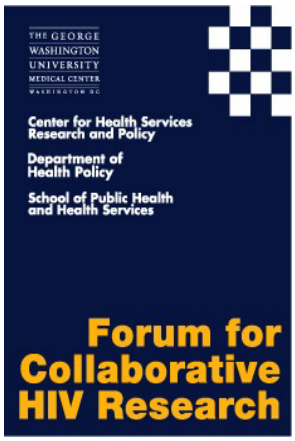
This paper summarizes the proceedings of the workshop. It is hoped that it will serve the purpose of stimulating research in the area of sex and gender, help refine and redefine the research agenda and facilitate collaborations across disciplines.



Introduction

Sex and gender are two closely related yet distinct concepts that affect HIV/AIDS at virtually every level. Although recognition of the importance of sex and gender in HIV/AIDS has increased, research has focused on either biological sex differences or socio-culturally constructed gender issues. Rarely has the research approach been to tackle both, or to investigate how sex and gender intersect and/or interact in HIV/AIDS. Furthermore, in HIV/AIDS as elsewhere, "sex" and "gender" are frequently used solely in reference to women's issues, rather than reflecting the full spectrum of sex biology and gender identifications. An additional layer of confusion in sex and gender research may be attributed to the euphemistic use of "gender" as a proxy for "sex" [1]. As HIV/AIDS continues to spread in women and men, it will become increasingly important to understand the medical - biological concepts and the socio-cultural dimensions of HIV disease and HIV risk in all those affected, with a strong emphasis on how each of these is related to the other with regards to sex and gender.

The HIV/AIDS epidemic has shifted from affecting primarily white men who have sex with men (MSM) to men and women of different racial and ethnic backgrounds in the developed world. Globally, the major burden of the epidemic is in the developing world. According to the 2002 UNAIDS report, 19.2 million women, out of a total of 38.6 million adults, are living with HIV/AIDS [2]. In sub-Saharan Africa, young women (aged 15-24) are infected more frequently than young men. In 2001, the estimated infection rates for young women were 6-11% compared to 3-6% for young men. In the USA, in the time period 1992-1997, a growing proportion of persons living with AIDS were women, accounting for 14% of adults and adolescents living with AIDS in 1992 compared to 20% in 1999[3]. Most affected are women of color, with African American and Hispanic women accounting for 78% of AIDS cases reported, whereas they represent less than one-fourth of all US women. The Centers for Disease Control and Prevention recently

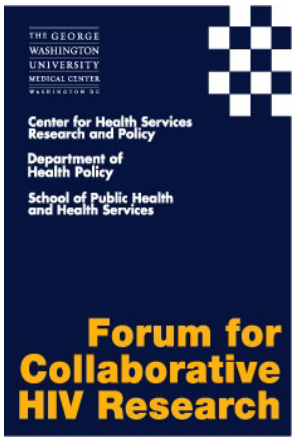


released a summary of numbers of individuals diagnosed with HIV infection in the 29 states of the USA that conduct name-based HIV/AIDS surveillance during 1999-2002. Of the 102,590 diagnoses, 30,264 or 29.5% were in females[4]. On the other hand, new HIV diagnoses among gay and bisexual men have increased by over the last three years, with a 7.1% increase from 2001 to 2002. This indicates that this population remains at high risk for infection.

Although the shifts in the epidemic have been well recognized, the recognition of the importance of understanding *how* various populations are affected, how they are vulnerable and how to launch effective education, prevention, care and treatment programs has lagged behind. We need to better understand the cultural/social and racial/ethnic backdrop to the sex and gender question, and this applies equally to the domestic and the global HIV/AIDS setting.

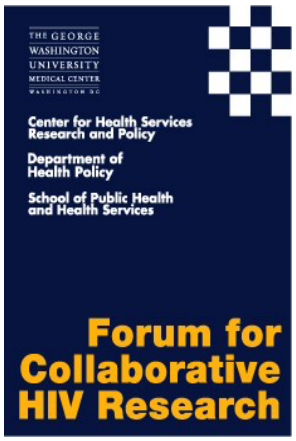
The Office of AIDS Research of the National Institutes of Health works within the Office of the Director to coordinate HIV projects and initiatives across the various NIH Institutes. HIV research is divided along scientific discipline lines with additional cross-cutting themes, such as "Women and Girls"[5]. This research plan elucidates the various areas where special emphasis on women and girls is required. However, in keeping with the theme of this workshop, all the priorities geared explicitly toward women and girls can also be extended to men and boys.

Barriers to progress in research on sex differences do persist; nevertheless, the study of sex differences is evolving into a mature science. The Society for Women's Health Research has championed the cause of sex based analysis, or sex-based biology. This society has challenged the practice of using the "male norm" to extrapolate results to females. Their work led to the Institute of Medicine (Committee on Understanding the Biology of Sex and Gender Differences) report *Exploring the Biological Contributions to Human Health: Does Sex Matter?*[6]. The overarching conclusion was that yes, sex (being male or female) does matter. Every



cell has a sex; sex begins in the womb, and affects behavior and perception as well as health.

Participants of the Sex and Gender and HIV Workshop represented multiple disciplines, including virology, immunology, clinical science, behavioral science, epidemiology, public health and policy. The tasks for this expert group was to discuss interdisciplinary, multidisciplinary and transdisciplinary concepts for research of sex and gender and HIV.

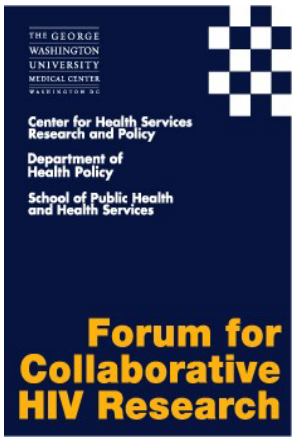


Sex and Gender

The commonly used definitions listed below indicate how sex and gender differ and how the concepts may or may not overlap. Whereas "sex" refers to a biological trait, "gender" is a product of genetics, behavior and societal/cultural impact. In addition to these, there are the distinct concepts of sexual orientation and sexuality.

Definitions		
	Sex	Gender
IOM	Classification of living things generally male or female according to reproductive functions assigned by the chromosomal complement	A person's self representation as male or female, or how that person is responded to by social institutions on the basis of the individual's gender presentation… shaped by environment and experience
WHO		The array of societal beliefs, norms, customs and practices that define "masculine" and "feminine" attributes and behavior

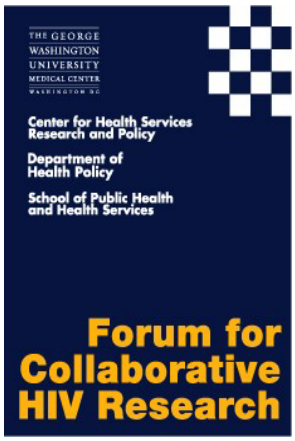
These definitions reflect our tendency to continue thinking in binary terms – either male or female; either masculine or feminine (or maleness and femaleness). The binary approach does not take into account the full spectrum of biologic sex or gender identity. The phenomena of intersex and transgender individuals illustrate how assignment of male or female schemes based on reproductive function and chromosomal complement do not accommodate the continuum – the complex interplay of biological and social factors that determine our sexual and gender identities. The biologic foundation of "gender" was already challenged in the early 20th Century; Freud raised the notion of a gender continuum and by 1910, the binary model was generally questioned. Sex reassignment surgery was carried out in Berlin in 1920. However, in the USA, it was not until the 1960's that the issue of transgender and questioning the "gender dichotomy" came to the fore [7]. Fausto-



Sterling has described the incidence, the issues surrounding and the medical approaches that have been taken to "fix the problem" in her book *Sexing the Body: Gender Politics and the Constructions of Sexuality* [8].

The relative importance of attribution to biologic or social influences has shifted back and forth over the decades. Clearly, we need better models of the social/biological interactions that affect such complex phenomena as gender identity. A more comprehensive system rather than the dichotomous one we tend to use encompasses sex chromosomes, gonads, fetal hormones, internal sex organs, external genitalia, sex of assignment, sex of rearing, gender identity of childhood, pubertal hormones, secondary sex characteristics and gender identity of adulthood. For example, patients with an intersex problem frequently develop a "sex role" concordant with their sex of rearing rather than their gonadal sex. On the other hand, the transgender phenomenon challenges the concept that gender identity is solely determined by rearing practices. Transgender individuals have problems identifying with their biological sex as well as with their gender assignment at birth. Unfortunately, lack of understanding of this phenomenon has led to discrimination and lack of access to legal rights and medical care for transgender individuals.

Why is it important to recognize the concept of a continuum for sex and gender rather than a binary classification system? An example which illustrates stereotypic attitudes and which places the confusion regarding the importance of biological sex factors and of cultural concepts into context is given by the policy of gender verification at competitive sports events [9]. With the goal of preventing men or women with "unfair male-like advantages" from participating, the International Olympic Committee mandated biologic verification of female athletes, starting in 1968, and continuing through to 1999. In search of the athlete's "true sex", women had to undergo visual inspection; this was changed to gynecologic examinations, then to laboratory (chromosome) tests. The result was that many women with intersex characteristics were screened out and women with minor defects in chromosome complement were disqualified. The medical inconsistencies were

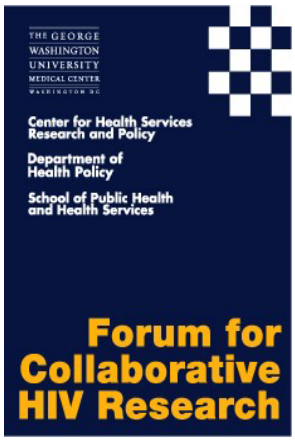


finally recognized and in 1999, the International Olympic Committee abandoned chromosomal screening.

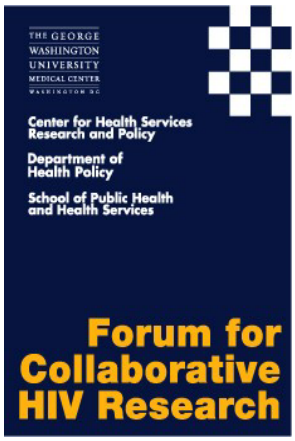
Highly relevant to the content of this report, is the potential for attitudes about and beliefs related to sex and gender to modulate policy in the public health arena; sex related health issues such as STD's and HIV provide strong examples of this [10,11]. These attitudes will be reflected in public health policies addressing prevention, prevention education and prevention research, as numerous examples throughout history (and recent history) attest.

Public health efforts have been shaped by social definitions of gender roles and society's desire to maintain these. Historical examples from the USA include the government's recommendation for premarital syphilis testing for men but not women (and the accompanying advice to the bride's to be relatives to demand premarital testing of the groom) [12]; reference to future wives and mothers as the "girl who is waiting for you" in contrast to "women who are selling their bodies and infecting weak men" [13]; and the notion that abstinence and self-control present the only option, rejecting the previously embraced policy that prophylaxis could be effective against venereal disease [14,15]. The need to protect and preserve military personnel during WWII required yet another shift in policy, resulting in dissemination of both information and prophylaxis but with starkly contrasting treatment of men and women who were found to have venereal disease.

Dr. Alexandra Lord from the National Library of Medicine placed the current HIV/AIDS epidemic into the historic context: "The AIDS crisis and our response to it has several direct parallels to the syphilis and gonorrhea epidemics in the nineteenth century: both were and are characterized by a pervasive fear of contagion, concerns about casual transmission, the stigmatization of victims, the search for magic cures, and most importantly, both epidemics have been directly –



and often negatively – shaped by our beliefs and understanding of male and female roles"[16].

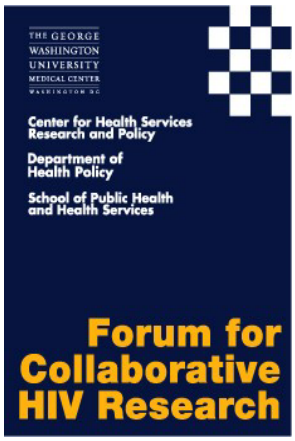


Sex and gender and HIV

There is hardly an area in HIV/AIDS that is *not* affected by issues having to do with sex and/or gender. Issues include vulnerability to infection, stigma (as it pertains to sex, gender and HIV status), prevention behaviors, natural progression and disease manifestation, response to vaccines, access to treatment, pharmacology and treatment response.

Examples of situations in which both physiology and societal factors augment risk for infection include the special vulnerability of girls and young women, especially in settings where forced sexual intercourse is frequent. Frequently, women lack the skills or the opportunity to negotiate the incidence and nature of intercourse and society may not allow for women to acquire the necessary skills. This is compounded by physiological factors that render young girls more vulnerable to infection. Furthermore, the custom of anal intercourse for purposes of maintaining virginity or avoiding pregnancy may affect the level of risk for infection. Another area in which both physiological and societal factors intersect is the use of hormonal and other methods of contraception. The effects of these on HIV acquisition and progression after infection are under investigation. But societal and policy trends may restrict access to family planning services generally or limit the type of service and contraception options available.

Men may be more vulnerable to infection because of societal attitudes regarding what men should know and the view that it is not acceptable to seek information and this may be compounded by the stigma associated with sexual orientation. Virtually nothing is known regarding the biological aspects of infectivity and transmission for transgender individuals.



Sex Differences Relevant to HIV: Some Specific Examples

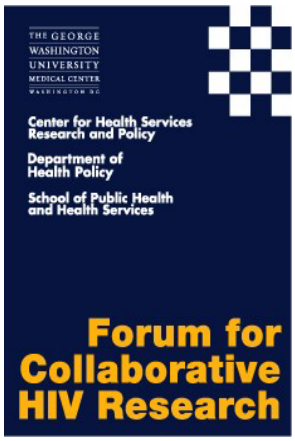
Selected examples – by no means an exhaustive list -- of sex differences relevant to HIV were reviewed during the workshop and summarized below. The purpose of these reviews was to stimulate cross-disciplinary thinking and discussion.

Differences in Vaccine Responses Between Men and Women

Differences in immune systems between men and women do exist. For example, many autoimmune diseases are more prevalent in women. [17]. Differences in immune cell subsets have also been described, with women having a 10% higher absolute CD4 T cell count than men [18, 19] and higher frequency of Vα24 NKT cells [20].

Studies from the USA Army Medical Research Institute of Infectious Diseases (USAMRIID), reviewed by Phillip Pittman, indicate that vaccine responses as well as incidence and nature of adverse reactions may differ between men and women. Included in the review were studies with Venezuelan Equine Encephalitis (VEE TC83), Yellow Fever Vaccine (YFV), Anthrax Vaccine, Adsorbed (AVA), and Botulinum Toxoid (Pentavalent).

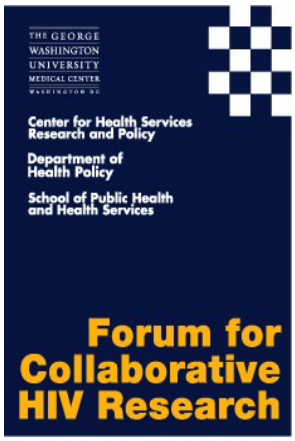
A study reported in 1996 that 624 volunteers (490 or 78.5% men) received the VEE TC83 vaccine. 85% of men responded, whereas the response rate was only 74% in women ($p = 0.007$) [21]. The geometric mean titer was 89 in men versus 57 in women ($p = 0.007$). These results were confirmed in a subsequent study including 718 individuals. In an analysis adjusted for sex and vaccine exposure history, the odds ratio for non-response was 1.81 (95% confidence interval 1.18, 2.75) for female versus male, and 2.20 (95% confidence interval 1.09, 4.29) for prior exposure versus no prior exposure. Females were also more likely to be non-responders in a study of 915 individuals receiving a live attenuated yellow fever



vaccine (p=0.0062), and females were more likely to experience injection site reaction (p = 0.0154). In all the studies cited above, women received the vaccine during menses to ensure no fetal exposure to live vaccines. The effect of this timing on response rates is not known.

Two anthrax vaccine (AVA) studies were reviewed. In an observational study based on self-reported data including 10,722 individuals followed between 1970 and 2000, women experienced more induration, erythema, tenderness, warmth, pruritis, lymph node enlargement and edema than men [22]. A prospective, randomized pilot study of AVA comparing reduced schedules and two routes of administration confirmed these findings [23, 24]. Volunteers (n=321) were randomized to one of seven groups, including intramuscular (IM) and subcutaneous (SQ) administrations at different schedules. Overall, local adverse events were more frequent in the SQ group and experienced in a significantly higher proportion of women after the first SQ dose compared to men (63.%4 vs. 24.2% for SQ nodules, 63.4% vs. 22.0% for erythema, and 38.0% vs. 3.0% for induration, $p<0.001$). Although females had higher antibody titers than men, the peak geometric mean antibody response was not statistically different between men and women. Finally, in a study of individuals receiving the Pentavalent Botulinum Toxoid (PBT) vaccine, (n=1090), women were again more likely to experience injection site reactions (15% vs. 4%, $p<0.0001$).

In summary, sex-based differences in antibody responses have been reported for the live, attenuated Venezuelan Equine Encephalitis and the Yellow Fever vaccines, and sex based differences for injection site reactions have been reported for AVA and PBT vaccines. In contrast, no sex-based differences have been observed for vaccinia, plague, rabies, Japanese encephalitis and tularemia vaccines.

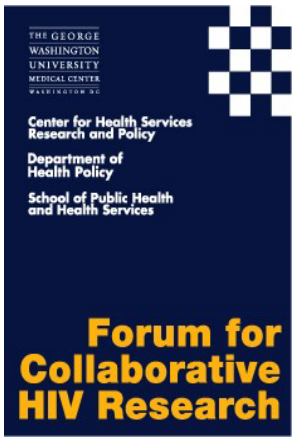


HIV Treatment: Challenges Due to Sex Differences

Several studies have reported sex differences in pre-treatment viral load levels. This observation raises the following questions: Does the viral load difference persist throughout infection? Is there a sex difference in disease progression? Is there a sex difference in response to therapy? What are the implications of these findings for initiating HAART in women and men? Equally important for treatment management is the question: Are there sex differences in antiretroviral toxicities?

Timothy Sterling reviewed the data concerning differences in viral load levels between men and women. In the ALIVE cohort of injection drug users, the initial median plasma HIV-1 RNA levels were 50,800 copies/ml in male seroconverters and 15,100 copies/ml in female seroconverters, this difference being highly statistically significant ($p<0.001$) [25]. In contrast, the CD4 cell counts were not statistically different between men and women. Longitudinal studies indicated that the differences in HIV-1 RNA levels between men and women were highest early after infection and dissipated over time [26,27]. A meta-analysis of 21 studies documenting HIV-1 RNA levels in women and men demonstrated that the largest differences were observed in populations with higher CD4 cell counts, thus supporting the association between lower viral load levels in women and time since infection [28].

Given the differences in HIV-1 RNA set points in the early stages of infection – is there a difference in the rate of disease progression? Early studies from the pre-HAART era indicated that women have a higher rate of progression [29,30,31]; however later studies, controlling for access to care, did not confirm these findings [32,33,34]. Similarly, no difference in rate of progression between men and women was observed in the ALIVE cohort study [25]. Thus women appear to progress at the same rate of men, but do so with lower viral load levels than men.

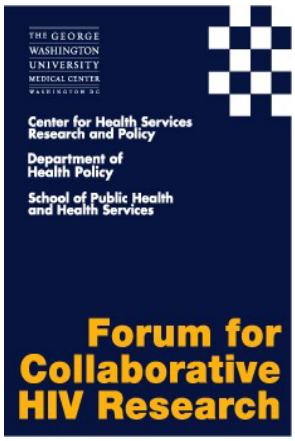


The effect of sex on treatment response has not been studied in great detail. Several studies reported no sex difference in treatment response [35,27], whereas others indicated that women may have more rapid and durable viral load suppression [36,37] and greater CD4 cell count increases [38,35]. The determinants of response to therapy are multi-factorial including among other factors pharmacokinetic and pharmacodynamic parameters, initial CD4 and viral load levels and patient adherence. Thus it is possible that treatment responses in men and women may indeed differ. Because of the multiple factors involved, whatever difference might exist would best be investigated in randomized controlled trials.

Numerous studies have highlighted sex differences for drug toxicities. Women are more prone to experience mitochondrial toxicity associated adverse events, including lactic acidosis [39,40,41,42], higher incidence of skin rash and liver toxicity associated with non-nucleoside reverse transcriptase inhibitors [43,44,45,46], and different profiles of lipodystrophy compared to men [47,48].

The described and potential treatment related sex differences will have an impact on decisions regarding when and how to start treatment. If HIV-1 RNA levels contribute to the when to start decision, women would be advised to start later than men in spite of similar risk for progression to AIDS. The current guidelines are primarily based on CD4 cell counts rather than viral load [49], thus the difference in viral load is unlikely to result in eligibility differences between the sexes. However, if viral load levels are taken into consideration as secondary criteria in ambivalent situations, women and men might experience differences in treatment strategies [25,50]. Furthermore, the underlying mechanisms for this difference is unclear, and it would be of interest to achieve a better understanding as this may further our understanding of HIV pathogenesis.

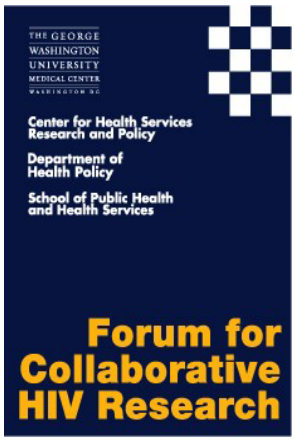
Mechanisms that have been proposed to explain the difference in viral load include hormonal effects, difference in CCR5 density, and HIV-1 diversity at time of infection.



Estrogen has been shown to down-regulate tumor necrosis factor alpha. Since this cytokine directly affects HIV-1 expression, it is conceivable that estrogen leads to lower HIV-1 RNA levels in plasma [51,52]. In a small study involving 14 HIV-positive women, a decrease in HIV-1 RNA levels from early follicular to the midluteal phase was observed in ovulating women [53]. Conversely, in another study of 55 HIV-positive women, HIV-1 RNA levels in genital tract secretions were shown to vary during the cycle, with no difference observed in the plasma HIV-1 RNA levels [54]. Evidence supporting non-hormonal differences in HIV-1 RNA levels is presented by a study of 184 HIV-positive infants. The CD4 cell count was higher in female infants, and the HIV-1 RNA level approximately 0.5 log10 lower, although this was not statistically significant [55]. After age 4, viral load was shown to be 0.25 – 0.5 log10 lower in girls than in boys [56].

Interestingly, the density of the CCR5 receptor on CD4+ cells is lower in women than in men (9981 vs. 11,823 molecules/cell, p=0.01) [57,58]. Since HIV RNA in plasma strongly correlates with CCR5 density, this observation would provide another explanation for differences in viral load between men and women [57,58].

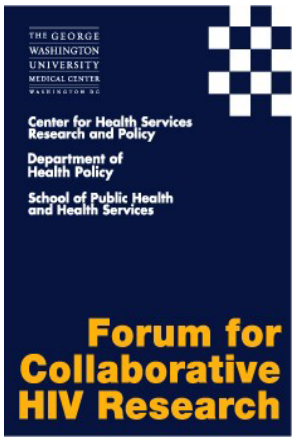
Finally, the observation that women are more likely to be infected by multiple virus variants is an intriguing one. This observation was made in a study involving Kenyan men and women infected through heterosexual contact, within the same geographic area and involving the same HIV-1 subtypes [59]. How this might relate to viral load set points is not clear, but it is yet one more indication that differences between men and women may be more prevalent than anticipated.



Developing a Research Agenda for Sex and Gender Issues in HIV

Participating experts worked in groups to discuss and recommend topics, issues and questions for a sex and gender research agenda. These discussions took place in two break-out sessions. In the first session, experts were grouped generally according to their field of expertise or interest (basic science, epidemiology, clinical science and social science). Specific topics were chosen based on the reports of the first session reports for discussion in interdisciplinary groups during the second break-out session. Both session groups were balanced in terms of academia, agency, industry, and advocacy representation.

The following is a summary of the proposed research agenda. As anticipated, there was a significant amount of overlap and agreement among the various discussion groups. This summary groups the recommendations according to theme rather than individual groups.



Session I

I. Overarching Themes

A. Integration of basic science into clinical and social science

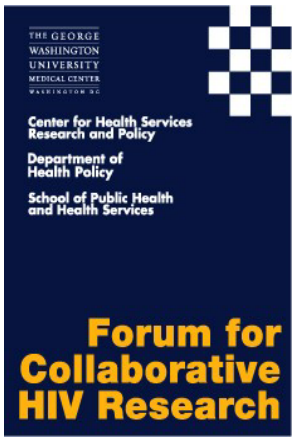
- Integrate sex and/or gender specific questions into clinical studies up front
- Ensure a balanced number of men and women in early trials (phase I and II)
- Identify the requirements for women to enter clinical trials
- Control for ethnicity, age, gender and social issues in basic and clinical science research
- Establish adequate funding and support mechanisms required for the infrastructure needed to incorporate these recommendations into clinical trials
- Fund and support cohort studies

B. Integration of behavioral and social sciences and clinical science

- Identify and separate out the behavioral impact on biological or clinical scientific findings
- Develop predictive models for what drives gender differences
- Develop regulatory guidance on gender-specific data
- Integrate community participation in research design and representation of data

C. Defining sex and gender; identifying gender roles

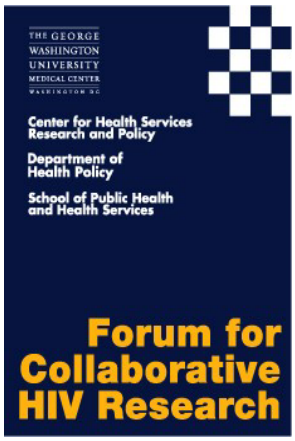
- Develop standardized definitions and measurements of gender to apply to current and new surveillance and epidemiological studies, clinical trials and other research
- Identify existing gender roles: address the individual natures of each relationship



- Expand the definition of gender
- Identify mechanisms for integration of male sensitivity training into patriarchal cultures without damaging masculinity

D. Transgender

- Assess the extent of transgender population and the HIV burden therein
- Investigate the role of external factors and choice in "gender" dichotomy in transgender individuals
- Investigate the role and impact of hormones in natural course of disease, surrogate markers, viral shedding, transmission and response to vaccines



II. Basic Science

Three major basic science research areas were discussed: 1) transmission, 2) hormonal effects, and 3) vaccine research, including the interrelationship between the immune and endocrine system as it applies to vaccine research. The need for normative data and standardization as a requirement for interpretation of basic science data and broader collaboration were also discussed.

The need to establish strong leadership in this field, and encourage interdisciplinary collaboration was identified as requirements to ensure progress in this field. There needs to be more recognition of the importance of sex-specific studies in immunology and vaccine research: findings in men cannot be used as surrogate for women or vice-versa. More mechanism driven and hypothesis generating research in the basic science of natural history, therapeutics, vaccines and microbicides should be encouraged.

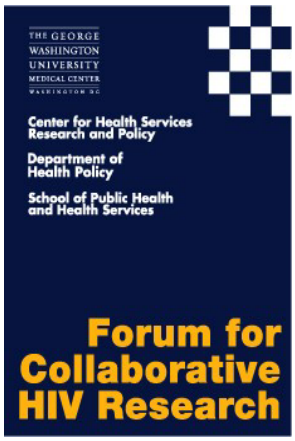
A major recommendation was to establish an international funding structure dedicated to basic research similar to the existing Comprehensive International Program of Research on AIDS (CIPRA).

A. HIV-1 Transmission

Research on mechanisms of transmission will involve research of the genital tracts and the immune system (mucosal and systemic) and is applicable to the fields of microbicides, vaccines and treatment. A cross-disciplinary approach is required, incorporating biology, immunology, endocrinology and psychology.

Specific topics related to mechanisms of transmission to be addressed include:

- Impact of menstrual cycle on susceptibility to infection



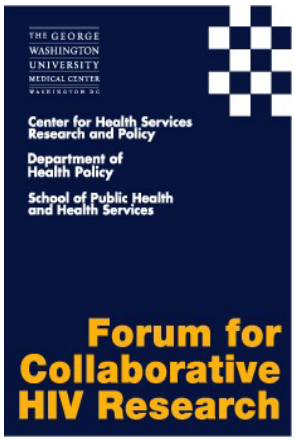
- HIV variants and infectivity
- Host specific factors related to infectivity (coreceptors, cofactors, sexual behavior)
- Role of endogenous and exogenous hormones
- Role of the immune system
- Identification and assessment of the impact of behavior on biological findings

In order for this research to be carried out, specific samples and information will need to be collected. These activities can be incorporated into ongoing or planned clinical studies. Recommendations included:

- Inclusion of women who have had complete or partial hysterectomies and paired samples to investigate the mechanisms of transmission and the role of hormones ("snapshot" studies)
- Collection of samples representative of the complete menstrual cycle for viral shedding studies
- Inclusion of menstrual diaries in clinical studies
- Investigation of the effect of the diaphragm on transmission at the cervical epithelium

B. Hormonal effects

Hormonal effects on transmission, immunology and vaccine responses need to be studied throughout the life cycle. Studies need to include endogenous as well as exogenous hormones. The transgender population offers an opportunity to study the effect of exogenous hormones on phenotype as well as systemic HIV.



C. Vaccine research

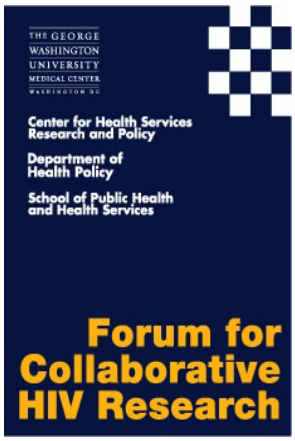
Vaccine research needs to be sex and gender specific. A strong recommendation was made to invest more resources into research of the interrelationship between the immune and endocrine system as it applies to vaccine research. Specific topics include:

- Understanding the differences in immune response to vaccines between males and females
- Understanding the underlying mechanisms for these differences
- Application of this knowledge to development of the most efficient and effective vaccines in the various populations to facilitate innate protection in male and female genital tracts
- Understanding the difference in adverse reactions to vaccines between males and females
- Investigating vaccine response and adverse effects in transgender populations

D. Normative data and standardization

There is a strong need to gain more knowledge regarding normative data for the different populations and physiological sites in order to foster collaboration across disciplines and research sites. Recommended action items included:

- Establish normative data for women as well as men
- Establish normative data for mucosal as well as systemic immune and endocrine systems
- Validate surrogate markers
- Standardize assays
- Collect pre-treatment clinical data comprehensively and systematically



III. Epidemiology

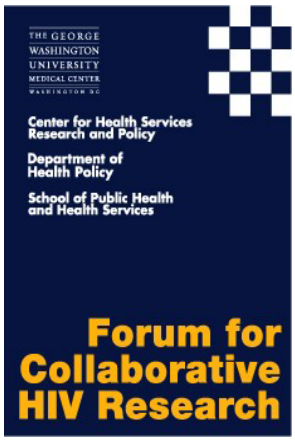
The aspects of gender that need to be taken into account for epidemiological studies include

- Gender role
- Gender identity
- Sexual behavior
- Sexual orientation

Epidemiology of sex and gender offers the opportunity to study questions in surveillance, prevention and treatment that could help elucidate gender-linked explanatory or risk-modifying behaviors. The panel discussed gaps and barriers to constructing and applying such questions to current and future research.

The lack of gender specific (as opposed to sex specific) data to study rates of HIV infection, risk factors, access to care and treatment, efficacy of treatment, adherence to regimen and other relevant HIV disease associated topics was identified as a leading gap in this field. Furthermore, it is not clear whether analyzing these relevant HIV data (risk factors, infection rates, treatment efficacy, etc) by gender rather than or in addition to sex yield statistically significant information. Other gaps and barriers to research identified included:

- Lack of standardized definition of gender from which to construct survey tools
- Lack of standardized questionnaire for identifying gender
- Lack of resources to apply surveillance, prevention and treatment protocols for gender issues
- Inconsistencies between self-reported gender and medically based data because of misuse of the term “gender” by the medical profession to refer to purely biological attributes



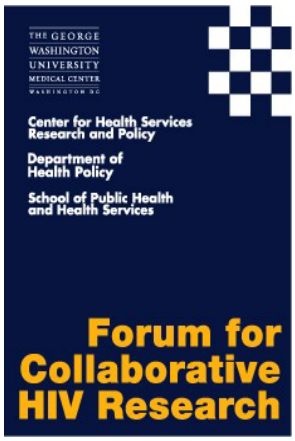
- Lack of centralized information on current efforts to track gender-related factors in HIV

Additional knowledge gaps that were identified included:

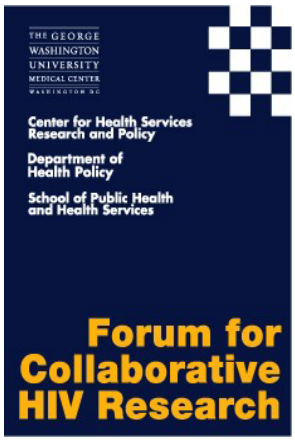
- Lack of knowledge regarding issues surrounding a possible causative relationship between gender and HIV risk factors
- Lack of information on the percentage of the population that is transgender
- Lack of widely available data on HIV infection rates for transgender individuals

The specific recommendations for research and research related activities were:

- Identify an acceptable construct for gender, including the four parameters listed above (gender role, gender identity, sexual behavior and sexual orientation), as well as cultural knowledge, attitudes on violence, family roles, religion/beliefs, sexual norms
- Assess availability of useful tools (questionnaires) in the field
- Investigate impact of gender on
    - Risk of HIV infection
    - Disease progression
    - Treatment response
    - Natural history of disease
    - Access to care and prevention services
- Investigate existence and nature of differences between sex and gender specific data with regards to the above parameters; assuming a difference between sex and gender does exist:
    - Develop standardized definitions and measurements of gender to apply to current and new studies, trials and other research
    - Integrate gender specific questions into surveillance systems, clinical trials, and other studies



- Identify what new studies need to be funded in order to address the key question developed in surveillance, prevention, and care
- Identify what resources need to be mobilized to undertake them



IV. Clinical Science

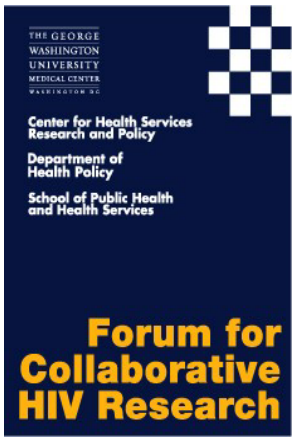
Many clinical science research gaps relating to sex and gender in HIV were identified. These can be grouped into gaps in clinical knowledge and gaps in access to treatment.

The clinical knowledge gaps are in the areas of pharmacokinetics, natural history, antiretroviral therapy, and woman-controlled prevention. The following specific research areas were discussed:

- Investigation of natural history of disease in the context of pregnancy and lactation, hormonal milieu, sexual dysfunction, life span (adolescence to old age) and transgender identification
- Investigation of differences in antiretroviral treatment, including differences in pharmacokinetics, drug interactions, efficacy and toxicity
- Impact of endogenous and exogenous hormones and pregnancy/lactation on treatment
- Impact of treatment on pregnancy and long-term maternal health
- Relationship between treatment and sexual dysfunction
- Development of efficient woman-controlled HIV prevention strategies (microbicides, other)

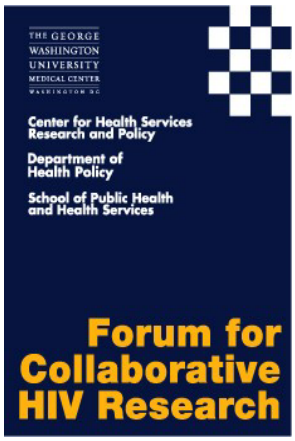
Gaps in access to care and treatment are:

- Understanding barriers to access of care and treatment
    - What are successful models?
- Understanding the true costs and benefits of HIV care (including pregnancy)
- Understanding disparities in enrollment and retention in clinical trials
    - Impact of clinical trial design
    - Impact of informed consent



- Ways to improve education and outreach

- Addressing inadequate education of providers
  - Understanding of novel education and support strategies to enhance quality of care and long-term outcomes
  - Peer advocacy, cultural sensitivity, learning styles, behavioral variables
  - Understanding the impact of attitudes of caregivers on quality of care and equality of access



V. Social Science

In order to effectively address gender issues in HIV, existing gender roles need to be identified and described within the complex context of diverse cultural settings and gender identities. The goals for work in this area need to be very clear, i.e. whether they are short-term goals such as addressing the logistics of prevention, or long-term goals such as attempting to alter the societal view of gender and acceptance of gender equality.

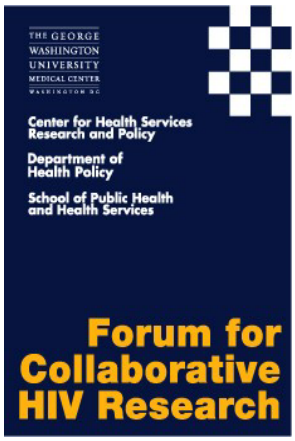
The panel discussed gender measurement issues, defining gender (see above, Overarching Themes), gender equality, and educational approaches to bring about change.

A specific identified barrier to research is the lack of a mechanism to address groups that historically have experienced trauma (e.g. Native American women).

A. Gender measurement

The measurement of gender is a complex undertaking, due to the flexible and dynamic nature of the gender persona presented to society. The roles are also contextual by culture, with acceptance of "classical" masculine or feminine behaviors dependent on specific settings (e.g. partner abuse may not be acceptable generally, except in certain cases). Another gap relates to the difficulty of defining "healthy sexuality", and by whom this is defined. Yet gender will play a major role in how safe-sex programs are designed and implemented.

Another issue is the commonly held assumption of risk taking behavior as it relates to "masculinity" and its attractiveness to heterosexual women. Research gaps exist as to what encourages this behavior; it should not be assumed that this trait is exclusive to males.



B. Gender equality

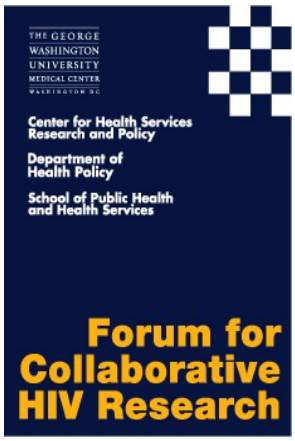
Gender equality has been addressed primarily from the women's perspective, while men and transgender individuals have been overlooked. Mechanisms need to be found to engage policy makers in accepting the need for gender equality. Educators and clinicians should either take a highly individualized approach, or an all-inclusive gender-neutral approach. Disparities in gender equality will affect even simple programs, such as the introduction of condoms.

C. Educational approaches

Educational programs need to be set up to educate those who hold power, rather than solely attempting to empower women. Current programs are perceived as undermining masculine authority in many cultures.

Specific recommendations for educational programs included:

- Design programs to allow a win-win situation for each partner
- Recognize that empowerment of women may be threatening to men, and that this may exacerbate existing power inequalities
- Devise educational programs that are non-threatening to men
- Stress the overall benefits of HIV education and prevention, not just the benefit to women



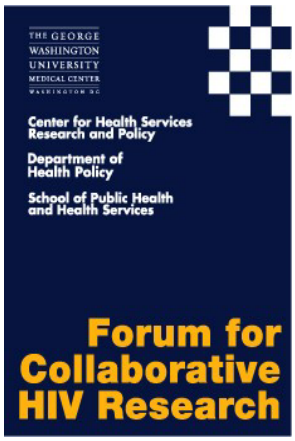
Session II

Four topics were chosen for a more in depth, interdisciplinary discussion: 1) vaccine research, 2) hormone effects, 3) measurement of gender and 4) health services research. Participants were asked to elaborate on approaches that would allow for the integration of biological, clinical, and social science perspectives.

I. HIV Vaccine Research: A Plan for Action

The strongest recommendation made was to develop leadership for a coordinated, interdisciplinary approach to vaccine development and strategy with a much broader platform for discussion – setting up a "vaccine community". A truly interdisciplinary approach is needed because the success of any vaccine study will depend on the ability to recruit and retain all populations in clinical trials. An understanding of the risk/benefit equation will be required to translate the clinical trial results into wide-spread vaccine campaigns in various cultural settings. Furthermore, no vaccine candidate is likely to be 100% effective, thus a strong association with prevention should be part of the plan from the very beginning. The proposed plan for action is summarized below.

1. Develop an overall coordination of the field
    - Facilitate an interdisciplinary approach
        - Social scientists
        - Behavioral scientists
        - Immunologists
        - Virologists
        - Vaccine experts
        - Microbicides experts
        - Prevention experts



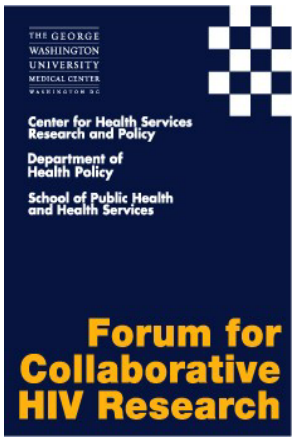
- Community representation (geographically and demographically appropriate)

- Establish partnerships between advocacy and community groups working on other issues, such as social stigmas and prevention
- Involve community in trial design and share information among existing networks
- Learn from a historical perspective: what are the necessary structures to facilitate successful vaccine trials?

2. Incorporate into the development of a vaccine strategy:
   - Importance of different routes of infection for vaccine design and vaccination strategy
   - Early integration of immunopathogenesis and vaccine response mechanisms

3. Design clinical trials to allow for appropriately powered analysis based on sex and gender. Concepts that need to be taken into consideration include:

   - Biological differences in men and women
     - Reproductive tract vs. mucosal membrane (vaginal, rectal intercourse)
     - Normative baseline data based on sex
     - Planning for and inclusion of appropriate tissue sampling
   - Risk/benefit of participation in vaccine trials based on gender
     - Behavior, stigma, power structures within a relationship
     - Informed consent issues
     - Impact of seropositivity based on gender and culture
   - Male/female rates of enrollment
     - Problem in the strategy or problem in the recruitment?
     - Recruitment of partners and involvement of partners in counseling
     - Effect of "male power" over women's ability to enroll



- Issues of vaccine trials for women of reproductive age
    - Confounding of the results by hormonal effects
    - Ethical issues regarding pregnancy in the various cultures

4. Study the interaction between sex, gender, race, socio-economic, age, risk category, etc by collecting and analyzing baseline data with gender-specific information on disease progression, behavior change, and surrogate markers.

5. Address region-specific cofactors, for example, control for co-infections such as genital herpes that may affect the transmission rate.

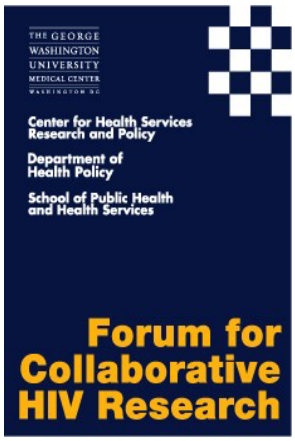
6. Plan for vaccine trials in adolescents and children:

- Collect age specific normative baseline data
- Address issues of informed consent
- Consider the effect of/on family structures

7. Make use of data from ongoing vaccine studies to look for sex and gender based differences in breakthrough infections in terms of surrogate markers, natural course of disease, and behaviors.

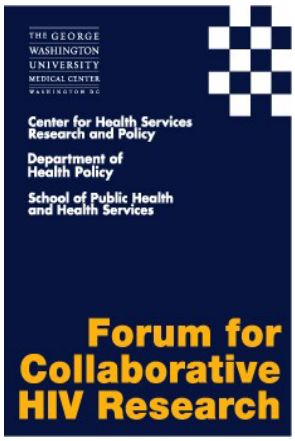
8. Research best communication and education strategies:

- How to explain that vaccine may be only partially effective
    - What does this mean at the individual level?
    - What does this mean at the population level?
- Investigate what the perception of HIV vaccines within the vaccinated community is
- Research into communication appropriate to culture, to setting, and to specific populations within a culture or setting
- Gender sensitive education and research on limits/benefits/requirements of vaccine trials and research disseminated to
    - Providers



- Volunteers
- NGOs
- Communities
- Senators
- Policy makers
- Politicians (may require support from NGOs)

9. Consider special issues surrounding therapeutic vaccines
   - Include sex- and gender-based analysis for the desired outcomes
     - Time off therapy
     - Decreased set point for viral load
     - Prolonged time to initiation of treatment
   - Assess impact of therapeutic vaccination on risk behaviors
   - Investigate effect of therapeutic strategies on relationship structures



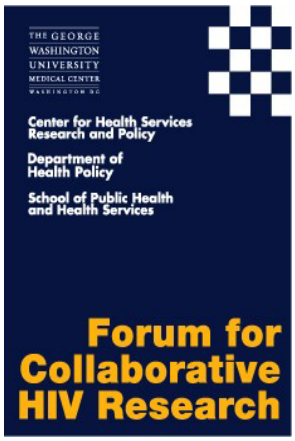
II. HIV and Hormone Research: A Systematic Approach

The central theme emerging from this discussion group was the need to set up a systematic research program to study the interactions of hormones, HIV infection, treatment(s), metabolism, gender and lifestyle. This should be incorporated into the current national and international structures, such as the Women's Interagency HIV Study (WIHS), Multicenter AIDS Cohort Study (MACS), Adult AIDS Clinical Trials Group (AACTG), Terry Beirn Community Programs for Clinical Research on AIDS (CPCRA), and the Comprehensive International Program for Research on AIDS (CIPRA). Institutional barriers and negative provider attitudes hamper the acquisition of knowledge regarding contraceptive use by women.

The panel addressed 7 specific areas for interdisciplinary research

1. Fertility and Fecundity
   - Assess contraceptive methods used by women by incorporating questions (with social science and community involvement) about contraception into all protocols
   - Consider ethical issues regarding HIV and pregnancy for the relevant cultures

2. Hormones and HIV Acquisition
   - Investigate diversity of prevention measures and the interaction of these measures with hormones
     - Incorporate questions on preventive methods into all prevention protocols, regardless of gender
     - Study the interaction of vaccines and microbicides with hormones
   - Incorporate questions on hormone use in all vaccine studies



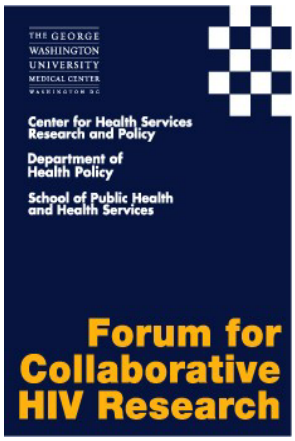
3. Hormones and Natural History
   - Investigate the interaction between hormones and natural disease progression
   - Incorporate questions on use of hormones in all natural history protocols

4. Hormones and HIV Treatment
   - Assess interaction between hormones and HIV treatments
   - Incorporate into national and international studies using existing networks
   - Track interrelationships across life cycle
   - Include gender as well as sex analysis in these studies

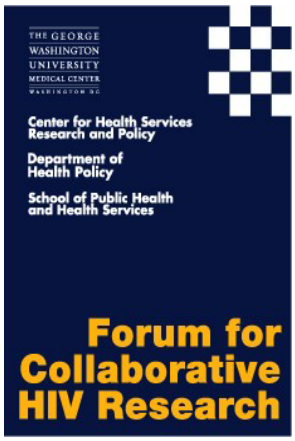
5. Hormones and HIV Transmission
   - Broaden traditional male/female axis to include gender

6. HIV and Reproductive Technology
   - Address cultural differences towards sterilization
     - Extent and impact of forced sterilization
     - Lack of access to sterilization
   - Investigate cultural differences towards artificial insemination

7. Hormonal Therapy and HIV
   - Research and Development issues
     - Research the effect of hormonal therapy on function and physiology
     - Investigate the medical risk factors associated with hormonal therapy
     - Investigate mechanisms of natural hormone restoration
     - Investigate hormone use and its effects in transgender individuals
     - Incorporate research of hormonal use into clinical trials for sports medicine and endocrinology
     - Develop appropriate drugs and formulations
   - Other activities



- Develop information and build advocacy to remove barriers to accessibility
- Involve community in treatment policy
- Educate endocrinologists, other providers, health industry regarding the effect of hormone therapy on HIV-positive individuals



III. Measuring Sex and Gender: Developing New Tools

The challenge for this group consisted of attempting to develop tools for measuring gender in HIV studies. Although the need to differentiate gender from sex has been confirmed and discussed from various perspectives, incorporating this differentiation into a framework for scientific study does not appear to have been accomplished to date.

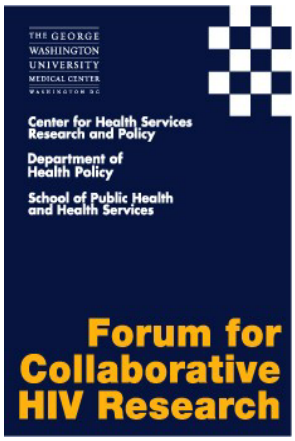
Three specific areas were identified where gender specific information needs to be collected:

- Gender attitudes regarding HIV issues
- Extent of gender-based structures operating for an individual in his/her cultural setting
- Extent to which an individual feels she/he has control over her/his own life, situation, and sexual behavior

The group divided the discussion into four areas: cross cutting issues, measurement models, ideas for applicability and general methodological concerns.

A. Cross cutting issues

- Any measure of gender must be culture specific
- Any approach must reflect the dynamic nature of gender
- Any approach must recognize the multidimensional nature of gender, rather than dualistic or continuum approaches
- Gender studies must recognize the fact that gender experience itself may vary depending on the question asked or specific outcomes being analyzed



B. Measurement Model

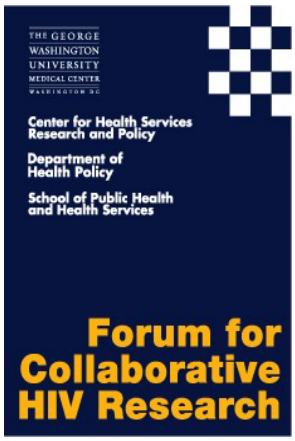
The framework for gender measurement that was developed incorporates dimensions falling into four levels: social, interpersonal, individual and bio-psychological.

1. Social
   - Cultural attitudes about gender generally
   - Structures that impart gender meaning (e.g. legal structures)
   - Religious and institutional structures

2. Interpersonal
   - Relational dependencies between men and women
     - Economic power, caregiving, etc

3. Individual
   - Psychological feelings of control, empowerment, efficacy
   - Culture specific gender personality traits
   - Gender identity
   - Attitude about one's gender and acceptance of identity
   - Enactment of gender behavior
   - Presentation of gender

4. Bio-physiological
   - Chromosomes
   - Endogenous/exogenous hormones
   - Physical exams
     - Genital and secondary sex characteristics
   - Imaging studies
   - "Other" category



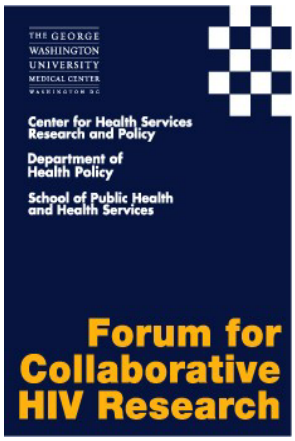
C. Ideas for applicability

- Manifestations of gender and interaction with risk, probability of transmission, progress of disease
    - Multidimensional nature of potential impact
    - Cluster analysis as opposed to dualism
- Identification of multiple genders within the context of society

D. General methodological concerns

- Creative methodologies and data collection modes
    - Consider interviewer effects
    - Consider quality of gender samples (e.g. pregnant women, needle clinics)
    - Difficulties in accessing gender-atypical persons

- Integrate both qualitative and quantitative approaches (focus groups, in depth interviews)

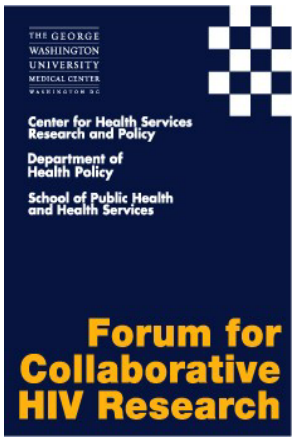


IV. Health Services Research: Power Dynamics and Access to Care

From the health services perspective, gender is a concept embedded in other sociodemographic variables and cannot easily be separated out as a variable unto itself nor subjected to traditional methodologies. The most relevant aspect of gender for health services research is the power dynamic – understanding power from the perspective of those who have it and those who do not. This involves individual power dynamics as well as the power defining structures within the community, culture, and country that determine whether an individual has or does not have access to care. A goal for health services research then becomes: how to reach those who are less empowered. A unifying theme is the "whole person approach", or understanding the individual in the context of her/his group associations and communities. The group focused on identifying issues of care delivery affected by sex, gender and race, understanding how gender operated vis-à-vis recruitment, enrollment and retention in clinical studies, and integration of HIV prevention in health care delivery systems. The need to change policy and mechanisms for this were also discussed.

Specific research goals identified include:

- Develop adequate language for gender research
- Assess the relationship between different stressors and HIV-risk behavior among different gender groups
- Investigate the relationship between protective factors and HIV- risk behavior among different gender groups
- Identify the right questions to ask domestically as well as globally
- Assess impact of gender sensitivity in programs and its relationship with reducing risk and increasing access
- Assess impact of introducing interventions on existing gender dynamics
- Identify mechanisms for reaching men and women who are not in the care system



  - Models that mitigate insurance barriers
  - Normalize HIV care to facilitate access and eliminate stigma
- Assess the impact of marginalization and find ways to avoid it

Examples of specific questions that can be asked are:

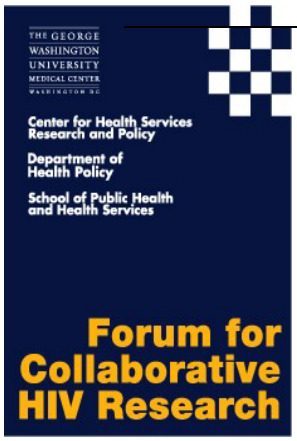
- Who is the decision-maker in your household?
- How are household decisions made?
- Who controls resources?
- How is money exchanged for health care needs?
- What is the right location for delivery of care service?

Service delivery:

- Provide ongoing training for providers in both HIV and non-HIV settings
- Identify barriers to primary care or prevention for those not in care
  - Use communities to identify
- What are the minimum conditions of service that have to be in place for quality and sustainable services?

Turning research results in policy changes:

- Find mechanisms for creating more receptive political climates in order to make it easier for policy makers to make the needed changes
- Develop strategies regarding the need to change systems or work within existing systems
- Create leadership opportunities within the current culture
- Develop a participatory approach for stakeholders that will support sustained care services (long term)
- Publicize research results to the community rather than just policy-makers and leaders



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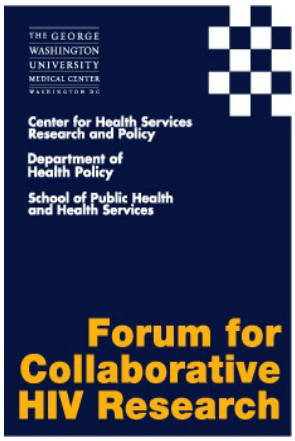
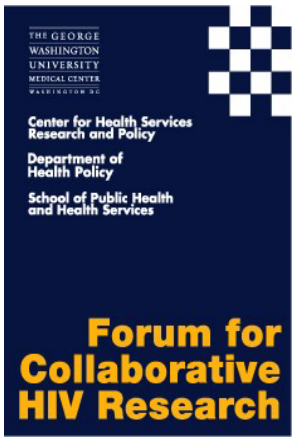


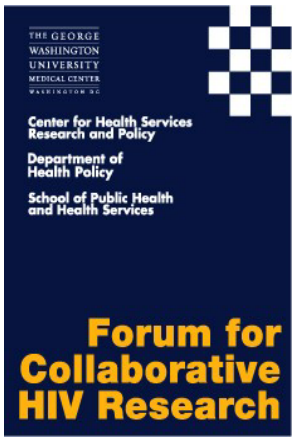
Appendix A: Planning Committee

Judith Auerbach	**Dawn Averitt**
Gina Brown	**Ben Cheng**
Polly Clayden	**Robert Coombs**
Susan Cu-Uvin	**Christine Everett**
Lisa Jacobson	**Michael Joyner**
Angela Kashuba	**Jennifer Kates**
Alan Landay	**Purnima Mane**
Sherry Marts	**Veronica Miller**
Janet Moore	**Blaine Parrish**
Phillip Pittman	**Timothy Sterling**
Fulvia Veronese	**Eric Wright**
Teresa Wu	

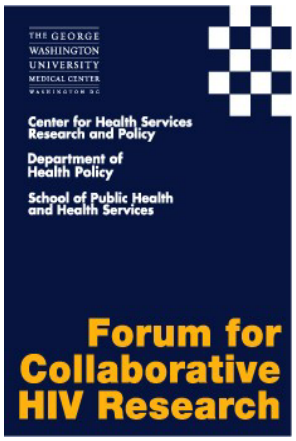


Appendix B: Workshop Participants

Deborah Anderson	**Judith Auerbach**
Dawn Averitt	**Magda Barini-Garcia**
Emily Bass	**Karen Beckerman**
Lisa Begg	**Christina Brackna**
Gina Brown	**Ben Cheng**
Wesley Clark	**Polly Clayden**
Susan Cohn	**Lorna Colquhoun**
Robert Coombs	**Jen Curry**
Yvette Delph	**Christopher Dezii**
Anne Donnelly	**Anke Ehrhardt**
Helen Elsey	**Elizabeth Finley**
Carrie Foote-Ardah	**Irwin Friedman**
Marie Gaarder	**Beatriz Grinsztejn**
Harry Haverkos	**Jane Hitti**
Lisa Jacobson	**Angela Kashuba**
Sarah Kambou	**Jennifer Kates**
Ruth Khalili	**Liza King**
Erna Milu Kojic	**Heidimarie Kremer**
Mary Latka	**Edd Lee**
Alexandra Lord	**David Mariner**
Sherry Marts	**Ian McGowan**



Veronica Miller	**Emma Naslund-Hadley**
Cathy Olufs	**John Palen**
Blaine Parrish	**John Perez**
Elizabeth Perry	**Phillip Pittman**
Angela Powell	**Julie Pulerwitz**
Elizabeth Ransom	**Lisa Rarick**
Patricia Reichelderfer	**Ruth Roman**
Monica Ruiz	**Refiloe Serote**
Joanna Short	**Rachel Snow**
Timothy Sterling	**Maite Suarez**
Leslie Tye	**Fulvia Veronese**
Karina Walters	**Lori Watkins**
Charles Wira	**Susan Wood**
Eric Wright	**Rebecca Young**

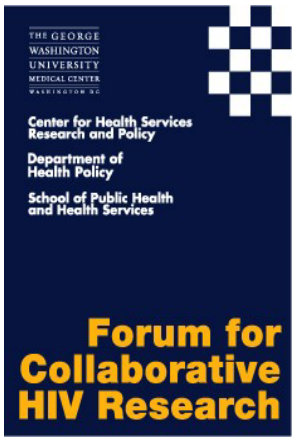


Appendix C: Workshop Agenda

FINAL AGENDA

November 4, 2002

9:00	**Welcome – Introduction to the FORUM**	Veronica Miller
	Sex and Gender: Why Now?	Judith Auerbach
9:15	**Analysis of Sex and Gender**	Sherry Marts Gina Brown Alexandra Lord
10:00	**Sex Differences**	Fulvia Veronese Phillip Pittman Tim Sterling
10:45	**Break**	
11:00	**Conceptualizing Sex and Gender**	Gina Brown Anke Ehrhardt
12:00	**Luncheon**	
1:00	**Charge to the Breakout Groups**	Gina Brown Sherry Marts
1:30	**Breakout Groups (By Discipline)**	
	Breakout Group #1 – Basic Science	Emily Bass, Facilitator
	Breakout Group #2 – Epidemiology	John Palen, Facilitator
	Breakout Group #3 - Clinical	Dawn Averitt, Facilitator
	Breakout Group #4 – Social Science	Rachel Snow, Facilitator
4:00	**Reports from Individual Breakout Sessions**	Designated Speakers



November 5, 2002

9:00	**Second Day Welcome/Remarks**	Veronica Miller
9:15	**Addressing Issues from Breakout Sessions**	Gina Brown Sherry Marts
9:45	**Breakout Groups (Interdisciplinary)**	

Breakout Group #1: Vaccine Research

Breakout Group #2: Hormone Research

Breakout Group #3: Measuring Gender

Breakout Group #4: Health Services Research

11:45	**Report Back from Breakout Groups**	
12:45	**Next Steps for the Sex and Gender Issues Project**	Veronica Miller
1:00-2:00PM	**Planning Committee Debrief**	