

Plenary Session 1-B

Impact of HIV on Women

Thursday, March 16, 2006, 4:00 pm - 5:30 pm

1

Quantifying the Correlation between Gender Inequality and HIV Prevalence

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Background: Although gender inequality appears to be a non-negligible driving force behind the global HIV pandemic, it is rarely considered in HIV control programs. Part of this negligence may be due to the absence of data quantifying the role of gender inequality in the HIV pandemic. This study aims at helping to bridge this gap by providing a summary quantification of the association between gender inequality and HIV prevalence.

Methods: Reports from the United Nations Development Program and the World Health Organization were used to obtain country-specific measures of gender inequality (specifically the gender-related development index GDI), estimates of HIV prevalence in all adults aged 15-49 years and HIV prevalence rates in females aged 15-24 years. Pearson correlation coefficients (r) and linear risk regression models were used to quantify the correlation between gender inequality and each of the two HIV prevalence measures.

Results: Complete year 2002 GDI values and year 2003 adult HIV prevalence estimates were available for 144 countries. Estimates of female HIV prevalence could be obtained for only 130 of these countries. The GDI value ranged from 0.278 to 0.955 while HIV prevalence ranged from 0 to 38.8% in adults and 0 to 39.49% in 15-24 year-old females. GDI was negatively associated with both adult HIV prevalence ($r=-0.42$, $p\text{-value}<0.0001$) and HIV prevalence in females aged 15-24 ($r=-0.45$, $p\text{-value}<0.0001$). On average, an increase in GDI value of 0.1 units was associated with a decrease in adult HIV prevalence of 1.4% and a decrease in HIV prevalence in females aged 15-24 of 1.8%.

Conclusions: Gender inequality is strongly correlated with both overall HIV prevalence and HIV prevalence in females. Two scenarios may explain these observations. Gender inequality may increase the risk of HIV acquisition in women. On the other hand gender inequality may also be a resultant of the HIV epidemic. These results indicate that efforts to reduce gender inequality need to be integral components of HIV control efforts.

2

The Jamboree is not Over Yet: Global Impact of HIV/AIDS on Young Girls

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This paper provides an overview of the impact of HIV/AIDS on young girls around the world using a variety of sources and studies. It includes specific data on girls prevalence rates, organized by gender and region. It also predicts the future impact on young girls, with a section on each group considered

at risk. Certain subpopulations of girls have been identified as bearing a disproportionate share of HIV's proliferation and/or are at increasing risk: young women and girls, young men who have sex with men, injecting drug users, sex workers and children who have been orphaned by AIDS are at a high or increasing risk of becoming infected.

Behavioral, physiological and socio-cultural factors make young girls more vulnerable than adults to HIV infection. This will also provide a regional overview of adolescents' knowledge of HIV/AIDS and behaviors in Sub-Saharan Africa that put them at risk for or protect them from infection. It also examines the social and economic context of adolescents' lives. All of these factors are fundamental to understanding the progression of the epidemic in Sub-Saharan Africa. In addition, knowing the risk and protective behaviors identified in this paper, which are generally not monitored by surveillance systems that track HIV/AIDS levels and trends, is essential for guiding the efforts of policymakers and providers of health information and services to young girls. - at both the regional and the country levels

3

What is a Heterosexual at High Risk for HIV Infection?

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Background: Increasing rates of heterosexually-acquired HIV infections in the U.S. demonstrate the need for behavioral surveillance among heterosexuals at highest risk for infection. However, a definition of "heterosexual at high risk (HET)" is not well articulated, often based on having multiple sex partners or risky partners; however, there is not consensus on the best definition. We sought to develop a definition of HET for use in the National HIV Behavioral Surveillance System (NHBS) which surveys persons at high risk for infection in 25 cities.

Methods: Sources of information used to create the definition included analysis of behavioral data, literature review, and experiences of expert consultants.

Results: Data from HIV+ and HIV- persons did not support multiple sex partners as the basis for HET: in a survey of HIV-negative STD clinic patients, 53% of women and 28% of men had only 1 sex partner in the past year; a separate survey of recently diagnosed HIV-infected persons found that 74% of women and 49% of men had 1 partner in the past year. Those with few risky behaviors themselves may be at risk from their partners; however, many are unable or unwilling to report unaware of partners' risks: in the survey of HIV-infected persons, most (women: 65% of women, men: 77% of men) did not know their partner's HIV risk. Geographic clustering of the HIV epidemic within cities was identified as an important consideration of risk for infection as well as behavior.

Conclusions: High risk for HIV infection among heterosexuals cannot be defined by individual behavior alone, but must consider sexual networks and social contexts. We defined a heterosexual at high risk as a person living in a high risk area - an area with high rates of heterosexually-acquired HIV infection, other sexually transmitted diseases and poverty - who had sex with ≥ 1 opposite-sex partner in the past year. This definition will be tested in the 2006 NHBS cycle of data collection.

4

Communication, Power, and Condom Use within HIV Sero-discordant Married Couples in Lusaka, Zambia

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Background: This study examines the association between communication and condom use among individuals in HIV sero-discordant married couples in Lusaka, Zambia. In Lusaka, about one in four adults are HIV positive and the dominant mode of transmission is heterosexual. In African cities today, one-half to three-quarters of HIV infections occurs within married couples, making marriage a major risk for infection. This study examines patterns of gendered and economic power differentials within married couples that influence condom negotiation.

Methods: The Zambia-Emory HIV Research Project (ZEHRP) collected 211 questionnaires from men (n=106) and women (n=105) in HIV discordant couples. Couples were interviewed about relationship qualities such as communication and conflict, attitudes toward gender roles, and condom use. Logistic regression was used to determine relationships between demographic information and indices of relationship quality and condom use.

Results: In bivariate analysis the factors significantly associated with a low likelihood of condom use were relationship support, gender attitudes, economic status, and HIV status. Bivariate analysis shows that 80% of the population has low relationship support and are unlikely to use condoms. 73% of individuals with conservative attitudes toward gender were unlikely to use condoms. 27% of those who were unlikely to use condoms were also unemployed. 64% of individuals unlikely to use condoms were HIV negative. 56% of individuals likely to use condoms were HIV positive. Age, sex, duration of marriage and sex of the positive partner also showed significance.

Conclusions: The results demonstrate that condom use in HIV sero-discordant couples is strongly tied to the quality of couples' communication. This suggests that the balance of power within marriage can determine if a couple is high risk for non-condom use, suggesting that women have little power in sexual negotiation with their married partner.

5

Promotion of Mutation-sparing HIV Suppression among Women with HIV Infection

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Background: In the global assessments for control of the human immunodeficiency virus (HIV) pandemic, access to and retention in medical care are necessary, yet insufficient, parts of an integrated health plan. Efforts to effectively promote mutation-sparing HIV suppression are essential, especially in maternal-child health. The objective of this study was to identify adherence support interventions (ASIs) to support women's commitments to take antiretroviral therapy (ART) despite economic and sociomedical challenges.

Methods: Women clinically-eligible for ART and enrolled in medical care self-selected to participate in a federally-funded study of ART adherence. Women who did not enroll were tracked in usual care. ASIs were grounded in the Transtheoretical Model of Behavior Change (TTM); outcomes were 12-month retention in medical care, initiation of ART, and change in HIV viral load and CD4 cell counts. At study completion, lessons learned for methods to optimize mutation-sparing HIV infection were systematically identified.

Results: The intervention group (n = 143), compared to the usual care group (n = 167), had significantly higher retention in care (88% vs. 56%), mean change in CD4 counts (+59 vs. -4 cells/mm³) and HIV suppression (40% versus 28%). In the ASI group, dynamic forward Stage of Readiness for ART adherence was associated with improved biological outcomes. Three identified lessons learned were 1) staff consensus for the TTM metrics

and processes to assess behavioral commitments, 2) benefit from a brief weekly interdisciplinary meeting focused on creation and implementation of tailored ART ASIs, and 3) challenges with sustaining a peer-based ART ASI program.

Conclusions: In this non-randomized study, stage-matched ART ASIs were associated with improved health outcomes among HIV-infected women. The baseline and follow-up assessments incorporated tailored educational and experiential ASIs focused on the women's perceptions, knowledge, attitudes, skills, and resources to optimize ART adherence. The study findings and lessons learned have implications for future efforts to effectively implement or broaden programs to promote mutation-sparing HIV suppression.

Plenary Session 1-D

Perinatal Infections

Thursday, March 16, 2006, 4:00 pm - 5:30 pm

6

Trends in Early- and Late-Onset Neonatal Group B Streptococcal (GBS) Disease: United States, 1996-2004

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Background: In 2002, CDC, American College of Obstetricians and Gynecologists, and American Academy of Pediatrics issued revised guidelines for the prevention of perinatal GBS disease. These guidelines recommend late antenatal screening of all pregnant women for GBS colonization and administering intrapartum antibiotics to carriers. This study examines multistate trends in neonatal GBS disease incidence before and after issuance of the guidelines.

Methods: We analyzed population-based surveillance data for GBS disease, defined as isolation of GBS from a normally sterile site, collected by CDC and the Emerging Infections Program Network from 1996-2004. This surveillance system covered >300,000 live births across 7 states in 1996 and >400,000 live births in 10 states by 2004. To calculate incidence, we used Vital Records natality data in the denominators.

Results: GBS disease incidence in infants <7 days (early-onset disease or EOD) was 0.33/1,000 live births in 2003-2004, representing a >30% decline from 2000-2001, the period before universal screening was implemented. Incidence of GBS disease in infants 7-89 days (late-onset disease or LOD) remained stable during the 9-year period under examination, averaging 0.33/1,000 live births. LOD incidence surpassed that of EOD for the first time in 2003, a trend that continued in 2004. Although the absolute difference in EOD incidence between black infants and white infants has declined, disparities persist. In 2004, the incidence of EOD/1,000 live births was 0.73 and 0.26 for black infants and white infants, respectively. Similar racial disparities were observed for LOD.

Conclusions: The publication of guidelines recommending universal prenatal GBS screening was associated with significant declines in the

incidence of EOD. Improved implementation of the screening strategy may result in additional gains. LOD rates remain unchanged. Black infants remain at highest risk for EOD and LOD. This disparity may relate to differences in access to prenatal care, higher rates of preterm birth (which is itself a risk factor for both EOD and LOD) among black infants, and higher GBS colonization rates among black mothers.

7

Risk Factors for Perinatal *Escherichia coli* Sepsis in the Era of Widespread Intrapartum Antibiotic Use

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Background: Infections due to *Escherichia coli*, a leading cause of perinatal sepsis, are increasing among very low birthweight infants. Ampicillin resistance threatens treatment of these infections. Use of intrapartum antibiotics to prevent perinatal group B streptococcal disease may increase the risk of *E. coli* sepsis. We evaluated perinatal *E. coli* sepsis risk factors.

Methods: From 1997-2001, case-patients, defined as isolation of *E. coli* from blood or cerebrospinal fluid among infants <7 days old, were identified in selected counties of California, Georgia and Connecticut by the Active Bacterial Core surveillance/Emerging Infections Program Network. Controls (N=1212) were obtained from a labor and delivery record review of a stratified, random sample of live births at the same hospitals in 1998 and 1999. Univariate risk factors were identified by logistic regression using SAS 9.12; Factors significant at $p < 0.15$ were evaluated in multivariable analysis using backwards, stepwise selection.

Results: Surveillance identified 132 *E. coli* cases, including 68 ampicillin resistant cases. The case fatality ratio was 16% (21/132). Two-thirds of cases were preterm and 49% (64/132) were ≤ 33 weeks' gestation. Fifty-three percent (70/132) of case mothers received intrapartum antibiotics; 70% of these received ampicillin or penicillin. Low (≤ 33 weeks) gestational age (Adjusted Odds Ratio 26.5; 95% Confidence Interval: 15.0-46.8), intrapartum fever (Adj. OR: 6.6; 95% CI: 3.3-13.2) and membrane rupture ≥ 18 hours (Adj. OR: 3.5; 95% CI: 2.1-5.8) were associated with increased odds of *E. coli* sepsis. Results were similar when cases were limited to ampicillin-resistant infections. Exposure to any intrapartum antibiotics, beta lactam antibiotics, or ≥ 4 hours of intrapartum antibiotics were associated with increased sepsis and ampicillin-resistant sepsis odds in univariate analysis; these factors did not remain associated with either outcome in multivariable models.

Conclusions: Receipt of intrapartum antibiotics does not increase or reduce the odds of perinatal *E. coli* sepsis. Identification of strategies to prevent preterm delivery may hold promise to reduce the incidence of this infection.

8

Knowledge and Awareness of Congenital Cytomegalovirus (CMV) among Women

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Background: Cytomegalovirus (CMV) is the most common congenital infection, occurring in up to 1% of all live births in the United States, and is a leading cause of sensorineural hearing loss and brain damage in children. Transmission of CMV from young children is a source of maternal infection during pregnancy, and may be prevented through improved hand hygiene. Yet, anecdotal reports suggest that the general public has little awareness of congenital CMV.

Methods: Women between the ages of 18 and 49 years, who were literate in English or Spanish, were asked to complete a written survey about congenital CMV. The survey was conducted at 7 different geographic

locations: Birmingham, AL; Atlanta, GA; Chicago, IL; Cleveland, OH; Houston, TX; Provo, UT; and Richmond, VA. Women were recruited from healthcare settings, primarily outpatient clinic waiting rooms.

Results: Of the 641 women surveyed, 22% had heard of congenital CMV. CMV awareness did not vary significantly by race or household income. There was, however, a trend in CMV awareness with respect to different levels of education ($p < 0.001$); women with less than high school education had the lowest awareness (4%), whereas women with a bachelor's degree or more had the highest awareness (31%). Women who had worked as health care professionals had higher awareness of CMV (56%) than those who were not health care professionals (16%). Women who were aware of CMV were most likely to have heard about it from a health care provider (47%). Almost no one gained information about CMV through the internet (Table 1). Of the women who had heard of congenital CMV, most did not know the correct answers to questions about modes of transmission, disease associations, or prevention. Women's awareness of CMV ranked last among common birth defects and childhood illnesses (Table 2).

Conclusions: This was the first survey to examine women's knowledge of congenital CMV. Despite its large public health burden, relatively few women have heard of congenital CMV and even fewer are aware of how infection during pregnancy might be prevented. Raising awareness among women and their health care providers will be an important first step for prevention of congenital CMV.

Table 1

Source of CMV Information	%
Health care provider	48
School or class	21
Magazine, book, or newspaper	16
Family or friends	8
Other	5
Radio or TV	2
Internet	1

Table 2

Common Birth Defects or Childhood Illnesses	Prevalence of Awareness (%)
HIV/AIDS	98
Down Syndrome	97
Sudden Infant Death Syndrome (SIDS)	94
Fetal Alcohol Syndrome (FAS)	83
Spina Bifida	76
Beta Strep (GBS)	59
Congenital Rubella	53
Congenital Toxoplasmosis	37
Parvovirus B19 (fifth disease)	32
Congenital cytomegalovirus (CMV)	22

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Evaluation of the Natural Immunity to *Haemophilus influenzae* Type A (Hia) in Latin American Mothers.

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Background: Since the introduction of the *Haemophilus influenzae* type b (Hib) conjugate vaccine, the incidence of Hib disease has dropped in the United States by 99% to rates of < 1 case/100,000 in children less than 5 years of age. Several countries in Latin America have included a Hib conjugate vaccine in their infant vaccination regimens. As the incidence of Hib disease decreases following successful vaccination, other non-type b *Haemophilus* are being recognized as causal agents of meningitis and pneumonia in young children. The vaccine provides specific protection to Hib and offers no protection to non-type b disease.

Methods: We have developed an ELISA that can measure IgG antibodies specific to *Haemophilus influenzae* type a (Hia) in umbilical cord serum from healthy

adult mothers. We evaluated umbilical cord sera from 52 Mexican mothers and 70 Chilean mothers for the presence of IgG antibodies specific to Hia. Seroreactivity in this Hia ELISA was defined as IgG antibody of ≥ 1 ELISA units/ml.

Results: We found these antibody levels in 7 out of 52 Mexican mothers (13.5%) and in 9 out of 70 Chilean mothers (12.9%). Although seroreactivity can also be due to the presence of cross reactive antibodies, there is the potential for type-specific antibodies to be elicited in response to previous contact with Hia. The results of this serological investigation should be confirmed with colonization studies to determine the rate of Hia circulation in these populations. In addition, case control studies can determine the potential of Hia for causing disease in young children and their contacts.

Conclusions: This assay can be an indicator of maternal natural immunity to Hia with the potential benefit of maternal antibody transfer to the infant.

Poster Session 1

BV-Estrogen-UTIs

International Ballroom 6

Friday, March 17, 2006, 10:30 am - 12:00 noon

10

Low Health Seeking Behavior and Inadequate Personal Hygiene; The Risk Factors for the Prevalence of *Gardenerella vaginallis* Infection (Bacterial Vaginosis) among Young Women in Developing Countries

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Background: *Gardenerella vaginallis* is the most causative agent of Bacterial Vaginosis, a polymicrobial, non-inflammatory syndrome involving genital tract. This abstract shows that the risk factors for the prevalence of the disease among young women in developing countries are low personal hygiene and inadequate health seeking behaviour towards the infection.

Methods: A random sample of 2,874 young women was drawn for this survey from three different higher institutions located in three different major cities in Nigeria. The mean age is 25.32. A well developed and reliable questionnaire [$r = 0.77$] was used to collect the data needed for the study and percentage was used to analyze the data. Relative Risk [RR] calculated is 1.6, i.e. $RR > 1$, indicating that the factors are risk factors, and the Confidence Interval [CI] for RR at 95% Significant level is $1.56 < 1.60 < 1.65$ from the formula, $CI \text{ Lower limit} < RR < CI \text{ Upper limit}$. RR and CI are used to validate the instruments.

Results: Table 1 revealed that only 25.34 % of the respondents had knowledge about *Gardenerella vaginallis* Infection, and Table 2 showed that young women in developing countries have lower personal hygiene toward the disease.

Conclusions: From the validated result of the study, it was clearly seen that low individual personal hygiene and the inadequate knowledge which reduced the health seeking behaviour towards the *Gardenerella vaginallis* infection are obvious risk factors for the prevalence of the infection among young women in developing countries.

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Illusions of Knowledge about Vaginal Microbiology

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Background: Bacterial vaginosis (BV) more than doubles the risk of HIV infection and is the most common cause of vaginitis, vaginal discharge, and malodor in women. We postulate that BV is essentially an ecological disturbance in which the 'steady-state' of 'normal and healthy' vaginal communities is disrupted. Ecological theory and empirical data indicate that not all communities are equally resilient and some are more susceptible to disturbance. We postulate that differences in the species composition of microbial communities among women may account for differences in the incidence of BV between racial/ethnic groups that have been previously reported.

Methods: Using culture-independent methods, microbial community composition was evaluated based on profiles of terminal restriction fragments (T-RFs) of 16S rRNA genes in each community, and by phylogenetic analysis of 16S rRNA gene sequences that represent the constituent microbial population.

Results: We have obtained compelling evidence that differences exist in the species composition of vaginal communities of Caucasian and black women. Among healthy women in both racial groups there were 9 major bacterial community types. However, there were stark differences between racial groups: four of the seven supergroups found in Caucasian women were not found in black women, and two supergroups found in black women were absent from Caucasian women. Importantly, lactobacilli were not dominant in all community types. In some women anaerobic microorganisms were common and important components of the vaginal ecosystem.

Conclusions: Since these anaerobic bacteria are notorious for the production of malodorous compounds, and have cellular morphologies that are distinct from those of lactobacilli, the criteria commonly used for the diagnosis of BV may result in high incidences of false positives. This could account for 'asymptomatic BV' (50% of cases) and also some proportion of 'recurrent BV' that results from the patient's normal flora being misdiagnosed as BV.

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Vulvovaginitis - Antifungal Susceptibility of *Candida* spp.

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Background: *Candida* vulvovaginitis (CVV) is a serious disease especially including pregnant women.

Methods: API 20 C AUX yeast precise identification system was used in this experimental program. ATB fungus 2 INT 14201 test was included for determination of the susceptibility of *Candida* to antifungal agents. Minimum Fungicidal Concentration was evaluated using PN-EN 1275 method. Activity of: chlorine (100g: 99g dichloroisocyanuric acid), alcohols (100 g: 35.0 g isopropanol, 25.0 g n-propanol), glucoprotamine (100g: 26.0 g) and aldehydes (100g: 9.5 g glutaraldehyde, 7.5 g glioksal, 9.6 g didecylodimethylammonium chloride) was estimated. Sensitivity of blastoconida and hyphae to disinfectants was assayed. Disinfectants treated and not treated fungal cells were observed under phase-contrast microscopy.

The aims of this work were as follow: 1. To estimate the frequency of infections caused by *Candida* spp. 2. To assay the susceptibility of *Candida* spp. to antifungal agents. 3. To evaluate the susceptibility of *C. albicans* to disinfectants.

Results: The frequency of *Candida* vulvovaginitis is shown in Table 1. The most frequent pathogen was *C. albicans* (85%). Susceptibility of *Candida* spp. to antifungal agents is presented in Table 2. The tested pathogens were sensitive to Fluconazol and Itraconazol. Only one strain *C. kefyr* was resistant to Itraconazol. Susceptibility of *C. albicans* to some disinfectants is shown in Table 3. Disinfectants showed 4 log reduction in 5 min. Aldehydes range against *C. albicans* hyphae was 0.08% and chlorine 0.022 %.

Blastoconidia and hyphae treated with disinfectants showed small cells, the nuclei could not be observed.

Conclusions: 1. *C. albicans* causes VVC in 85% (Table 1).

2. *C. albicans* is sensitive to Flukonazol and Itraconazol.

3. The hyphae forms are more resistant to disinfectants than blastoconidia.

4. The results of disinfectants activity against fungi (tested in variable condition) are different for blastoconidia and hyphae.

Estrogen contraceptive therapy is a predisposing factor for CVV (Paul L. Fidel Jr. *TRENDS in Microbiology*, Vol 12 No, 5, 220-226, May 2004, IF 6.665, total citations in 2002, 3777).

Table 1. Vulvovaginitis. Frequency of infections caused by *Candida* spp. (API 20C AUX)

Pathogen	Number of Patients (n)	Percentage (%)
<i>C. albicans</i> 1	123	80.9
<i>C. albicans</i> 2	6	3.9
<i>C. glabrata</i>	7	4.6
<i>C. guilliermondii</i>	3	1.9
<i>C. kefyr</i>	4	2.6
<i>C. krusei</i>	8	5.4
<i>C. parapsilosis</i>	1	0.7
Sum	152	100

Table 2. Vulvovaginitis. Susceptibility of *Candida* spp. to antifungal agents (ATB FUNGUS 2INT 14203)

Izolot	Flukonazol Percentage (%)	Flukonazol Percentage (%)	Flukonazol Percentage (%)	Itraconazol Percentage (%)	Itraconazol Percentage (%)	Itraconazol Percentage (%)
	Sensitive	Intermediate	Resistant	Sensitive	Intermediate	Resistant
<i>C. albicans</i> 1 n=84	100	-	-	100	-	-
<i>C. albicans</i> 2 n=30	98	2	-	82	18	-
<i>C. guilliermondii</i> n=35	99	1	-	85	15	-
<i>C. kefyr</i> n=25	95	5	-	80	19	1
<i>C. parapsilosis</i> n=20	100	-	-	100	-	-

Table 3. Susceptibility of *C. albicans* to some chemical compounds assayed by using PN-EN 1275

Pathogen	Minimum Fungicidal Concentration (%)			
	chlorine compounds	alcohols	glucoprotamine	aldehydes
<i>C. albicans</i> PZH 14	0.008	40	0.12	0.04
<i>C. albicans</i> PZH 15	0.014	40	0.12	0.04
<i>C. albicans</i> PZH 16	0.008	40	0.12	0.04
<i>C. albicans</i> PZH 17	0.008	40	0.12	0.04
<i>C. albicans</i> PZH 18	0.016	40	0.12	0.04
<i>C. albicans</i> PZH 19	0.004	40	0.12	0.04
<i>C. albicans</i> PZH 20	0.004	40	0.12	0.04
<i>C. albicans</i> PZH 24	0.016	40	0.12	0.04
<i>C. albicans</i> PZH 25	0.008	40	0.12	0.04
<i>C. albicans</i> PZH 26	0.008	40	0.12	0.04
<i>C. albicans</i> PZH 27	0.004	40	0.12	0.04
<i>C. albicans</i> PZH 28	0.004	40	0.12	0.04
<i>C. albicans</i> PZH 29	0.004	40	0.12	0.04
<i>C. albicans</i> PZH 30	0.004	40	0.12	0.04
<i>C. albicans</i> PZH 31	0.008	40	0.12	0.04
<i>C. albicans</i> PZH 32	0.008	40	0.12	0.04
<i>C. albicans</i> PZH 33	0.008	40	0.12	0.04
<i>C. albicans</i> PZH 34	0.008	40	0.12	0.04

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Adherent *Gardnerella vaginalis* Biofilm in Bacterial Vaginosis

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Background: Bacterial vaginosis is a common infectious disorder. Although known since ancient times, little progress has occurred in identifying causal factors. The disease is presently regarded as a clinical syndrome which is associated with a loss of "normal" lactobacilli flora and an overgrowth of resident ano-genital microorganisms.

Methods: We investigated the composition and spatial organization of the epithelial flora in biopsies from 20 patients with bacterial vaginosis and 40 normal pre- and postmenopausal controls using a broad range of fluorescent bacterial group-specific rRNA-targeted oligonucleotide probes.

Results: Bacterial vaginosis was associated with greater occurrence and higher concentrations of different bacterial groups. However only *Gardnerella vaginalis* developed a characteristic adherent biofilm, which was highly specific for bacterial vaginosis.

Conclusions: Adherent *Gardnerella vaginalis* biofilm is a prominent feature of bacterial vaginosis.

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Prevalence of Vaginal Lactobacilli with Antioxidative Activity in Bacterial Vaginosis

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Background: Bacterial vaginosis (BV) is a synergistic polymicrobial syndrome characterized by depletion of species of lactobacilli (LB) and intense overgrowth of commensal vaginal anaerobic bacteria. There are no data about the defensive antioxidative potential of LB in BV as compared to healthy persons.

We aimed to investigate the prevalence of antioxidative LB strains in vaginal microbiota of patients with BV and healthy Estonian women.

Methods: Specimens were obtained from 12 BV patients (before and after treatment) and from 7 healthy persons (age 18-34 y). LB were cultivated on MRS agar (Oxoid) and identified by API -50 CHL test kits (bio Mérieux). Whole-cell protein analysis by sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) was performed. Total antioxidative activity (TAA) was assessed by using lipid peroxidation test (Kullisaar et al., 2002). The TAA% was expressed as inhibition by the sample of the linolenic acid standard peroxidation.

Results: From 12 BV patients LB were found in 7 both before and after treatment, in 5 patients only after treatment. Before treatment 7 strains of 3 species of LB whereas after treatment 28 strains of 9 species were isolated, altogether 35 LB strains. All 7 healthy women were colonized by different strains of LB (16 strains of 7 species).

In 51 LB strains TAA varied from 5 to 60%. High TAA (>20%) was found in BV patients before treatment in 28.5% (2 of 7), after treatment in 60.7% (17 of 28) and in healthy women in 87.5% (14 of 16) strains.

Conclusions: There is a remarkable difference in prevalence of LB strains with high TAA values between healthy women and BV patients. Frequency of isolation of highly antioxidative LB strains increases after treatment of BV.

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Inhibitory Potential of Vaginal Strains of *Gardnerella vaginalis*

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Background: Bacterial vaginosis is characterized by a disturbance in the vaginal flora, due to the decrease of lactobacilli and over growth of bacteria, especially *Gardnerella vaginalis*, what suggests its harmful role. Bacteriocins play an important role in regulating the human microbiota. However, scarce or none data is available regarding bacteriocin-like substances on *G. vaginalis*.

Methods: The antagonistic substance production was evaluated for 33 vaginal strains of *G. vaginalis*, considering auto, iso and heteroantagonism. Antagonistic activity was evaluated by an overlay method, using glucose supplemented BHI agar, which was also used to grow 23 reference strains (Gram positive and negative, aerobic and strict anaerobic) and six species of *Lactobacillus*, beyond 30 clinical strains of *Lactobacillus* spp.. After anaerobic incubation at 37°C, for 48 h, bacteria were killed by chloroform exposure and covered with specific soft agar medium previously inoculated with an indicator strain. The inhibition halos were measured at the end of incubation periods at 37°C, under the appropriated condition.

Results: Most strains inhibited almost all the 23 reference indicator strains - remarkably against *P. anaerobius*, *P. gingivalis*, *P. intermedia*, *L. delbrückii*, *B. bifidum* and *S. aureus* - and lower activity against *Lactobacillus* spp. For the six reference strains and 30 clinical ones of the tested *Lactobacillus* spp., it was observed antagonism against *L. delbrückii* ATCC 7830, *L. acidophilus* ATCC 4356, *L. fermentum* ATCC 9338 and *L. casei* ATCC 7469 and against the revealing strains of the specie *L. gasseri* (deriving of symptomatic patients). These data are particularly important for the protective role that is attributed to the *Lactobacillus* in the normal vaginal environment. Synergism between vaginal *P. anaerobius* and *G. vaginalis* was observed as also seen in clinical evidence.

Conclusions: It was concluded that *G. vaginalis* produces, *in vitro*, one or more bacteriocin-like substances, with broad activity spectrum, certainly important to the microorganism colonization of the vaginal epithelium. Their characterization and ecological role in the vaginal environment are yet to be established.

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Investigation of the Pathogenesis of Menstrual Toxic Shock Syndrome

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Background: Menstrual Toxic Shock Syndrome (mTSS) was first linked to tampon usage around 1980 and the overall incidence of mTSS has been stable for the last 20 years. We have created an active, multidisciplinary research program investigating a variety of factors that we believe underlie the etiology and pathogenesis of the disease.

Methods: A multidisciplinary program has been assembled that involves the participation of more than 15 university-based scientists and physicians who have expertise in molecular epidemiology, microbial ecology, biofilms, mucosal permeability, vaginal physiology, infectious diseases, immunology, as well as engineering.

Results: This multidisciplinary research program has contributed new knowledge regarding the three domains that contribute to the disease: microbial, host, and environmental factors. The results have been published in peer-reviewed journals associated with women's health topics.

Conclusions: The results of this program have changed many paradigms about the factors associated with the disease. Even though our research on the trends in the incidence of TSS suggest no change in the national incidence of the between the years 1981 and 2004, we continue to investigate the pathogenesis of this disease.

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Women Accurately Conduct Vaginal pH Self-testing

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Background: Vaginal pH measurement is a rapid and simple method to help differentiate the etiology of vaginitis. Vaginal vault pH is usually normal (pH < 4.5) in vulvovaginal candidiasis but elevated (pH > 4.5) in bacterial vaginosis and trichomonas vaginitis. We evaluated the accuracy of self-measurement of vaginal pH compared to measurement by physicians as a component of improving self-diagnosis and appropriate management of vaginitis.

Methods: Each participant measured her vaginal pH using pH paper and then was seen by a physician who independently performed a vaginal pH test. The physician did not have access to the patient's pH reading.

Results: A total of 161 women were enrolled in the study. The average difference between the patients' pH readings and the physicians' was 0.2 points. 89.4% of the patients' readings were within 0-0.5 points of the values reported by physicians.

Conclusions: Vaginal pH self-testing by women may be a convenient and predictive tool for aiding in the differentiation of bacterial vaginosis and yeast vaginitis. This test could be done for the purpose of choosing between self-management and consulting a health care provider.

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Protective Effect of Estrogen Against Experimental UTI in Estrogen-deficient Mice.

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Background: *Escherichia coli* (*E.coli*) is the leading cause of urinary tract infections (UTIs) in women. *E.coli* bearing Dr adhesins represent a growing superfamily of fimbriae that cause UTI in humans, as well as, in the mouse model. We have shown that a hormonally associated complement regulatory protein, decay accelerating factor (DAF or CD55), serves as the tissue receptor for Dr adhesin. It has also been estimated that 10% to 15% of women >60 years old have recurrent UTI. We hypothesize that during bacterial infection, estrogen may prevent colonization by inhibiting binding of bacterial adhesin to specific host tissue receptor. We investigated the role of estrogen in bacterial colonization using a mouse model.

Methods: Ovariectomized C₃H/HeJ mice were used in the present study. A group of ovariectomized mice was pretreated with estrogen while another group of mice in the control group received the vehicle alone before experimental UTI. Animals were infected by bladder catheterization with Dr *E.coli* and terminated between 21-45 days after infection.

Results: Estrogen deficiency in ovariectomized animals without estrogen treatment lead to increased colonization of *E.coli* that was highly significant when compared to colonization in endogenous estrogen sufficient C₃H/HeJ (non-ovariectomized) mice (2.5 x 10⁵ vs 1.6 x 10⁶ CFU per gm, P= 0.0005). The group of ovariectomized animals with estrogen pretreatment showed significant decrease in bacterial colonization when compared to control group treated with vehicle alone (1.6 x 10⁵ vs 9.4 x 10⁵, P<0.05). The histology data in the kidney of these groups of mice also correlated with invasion results with a significantly reduced infiltration of inflammatory cells in treated vs untreated group.

Conclusions: Protective role of estrogen was confirmed in this experimental UTI model using ovariectomized animals treated with estrogen, resulting in significantly reduced bacterial colonization and inflammation. These findings support clinical evidence of increased susceptibility of post menopausal women to UTIs and this murine model may be useful in designing various therapeutic strategies to prevent UTIs in post menopausal women.

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Does Estrogen Modulate the Cytokines Response During Infection?

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Background: There is an increased susceptibility to urinary tract infection (UTI) in post menopausal women. Uropathogenic strains of *E.coli* expressing Dr fimbriae (Dr+) are clinically associated with chronic and recurrent UTIs. Inflammation is known to be associated with cytokine activity, and corticosteroids affect cytokine activity but information regarding the effect of sex-steroids is lacking. We hypothesize that estrogen offers protection by inhibiting binding of bacterial fimbriae to host receptor which results in protective cytokine production. This may affect the outcome of inflammation and susceptibility to disease. To study this, we investigated the cytokine response after experimental UTI in ovariectomized mice treated with estrogen.

Methods: Ovariectomized C3H/HeJ mice were divided into two groups - Group 1 mice received subcutaneous injections of the vehicle, and Group 2 mice received β -estradiol for five days prior to infection and once per week after the infection. Both groups were infected by instilling Dr+*E.coli* (0.05-ml) into the urinary bladder and terminated four weeks post infection. Serum samples were obtained before infection, at 8 days and 21 days after infection and analyzed for cytokines using multiplex bead assay for mouse cytokines.

Results: TNF- α , IL-1 β and IL-10 levels were significantly increased in mice in Group 1 (mice receiving only vehicle) that were experimentally infected with *E.coli*. This increase in cytokine production post infection was diminished in the mice in Group 2 that received estradiol treatment. This downregulation in cytokine levels correlated with reduced bacterial invasion in kidney tissues as determined by tissue bacterial CFU counts. IL-1 α and IL-5 were minimally increased and estrogen did not appear to have any effect on their production in response to experimental infection.

Conclusions: Estrogen deficiency in mice leads to increased invasion and increased inflammatory cytokine production. Estrogen modulates inflammatory cytokine production as well as invasion during estrogen deficiency. This estrogen deficient UTI model will be useful to investigate various hormonal therapeutic interventions for postmenopausal UTI.

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The Effects of Estrogen on the Immune Response to Vaccination in Mice

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Background: It is well established that sex differences influence the immune response. Indeed, many immune-mediated diseases occur more frequently in women than in men. Sex hormones may modulate the immune response to pathogens that cause infectious diseases and, therefore, the influence of sex hormones should be taken into account when designing preventive strategies for these diseases. Men and women may respond differently to vaccination and, because estrogen affects lymphocyte activity and cytokine production, we hypothesize that estrogen influences the immune response to vaccines.

Methods: Two groups of female mice were ovariectomized. One group received 17 β -estradiol replacement, whereas the other group (placebo) served as control. These two groups, along with a third group of intact mice, were immunized with a model antigen, i.e, tetanus toxoid (TT). We assessed TT-specific antibody levels, total antibody levels as well as IgG2a and IgG1 levels, which indicate a predominance of either a T helper 1 or 2 response, respectively.

Results: Mice treated with estrogen produced higher TT-specific antibody levels than placebo and intact mice. Total antibody levels did not differ between the three groups, indicating that estrogen specifically influences the response to our model antigen without detectable effects on total antibody production. Mice treated with estrogen produced the highest levels of IgG1 following vaccination, indicating the presence of a stronger T helper 2 response (and therefore humoral response) in this group as compared to the other two groups. IgG2a was not detected in any of the mice.

Conclusions: Our results show that estrogen may act as an immunomodulator and therefore, sex differences should be taken into account when designing vaccination strategies. Additional studies should be performed to determine whether or not the natural estrogen changes that occur during menstrual cycle, pregnancy or menopause influence the immune response to vaccines.

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Incidence and Distribution of Urinary Tract Infection among Post-menopausal Diabetic Patients and Antibiotic Sensitivity Pattern

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The Second Major health problem treated by physicians are Urinary tract infection. In men, the anatomical length of urethra (20cm) that provides an effective barrier that excludes microbial foray into the system. Conversely, in women, the length is only (5cm) moreover the urethral opening, vulvo vaginal opening and anal opening are close enough to risking the entry of microorganisms. This phenomenon explains the susceptibility of women to the UTI. One in every five is affected by UTI in her lifetime. Its inferred that higher incidence of bacteriuria is witnessed among post menopausal women diabetic patients than non-diabetics. During immunological study, the activity of PMN are depressed to greater extent especially affected with Diabetes ketoacidosis.

The major reported uro pathogens in our study are *E.coli* and *Proteus mirabilis* which are also found resistant to almost all of the narrow spectrum drugs. UTI caused by *Proteus spp.* are known to cause severe histological damage resulting acute pyelonephritis, calculi formation and renal impairment and discharge of blood in urine are also seen. Despite the fluctuating osmosis and the urea content, the strains of *E.coli* are known to thrive well in urine and it also uses type I fimbriae to adhere to uro epithelial cells. There is yet another substantiating factor germane to this study, from a recent study conducted in Santo Spirito hospital, Rome. About 148 women diabetic patients are tested for the Asymptomatic Bacteriuria and among them 79 patients are have known to suffer from Urinary tract infection and all of them are postmenopausal. Frequent discharge of blood and pus are often revealed to show the extent of damage caused to the urogenitals and perilous conditions of the patients. The test samples of urine are often cloudy, foul smelling and chronic conditions of excretion of protein is also seen.

Antibiotic Sensitivity test showed the presence of multidrug resistant microorganisms, predominantly *E.coli*, *Proteus mirabilis*, *Pseudomonas spp* and pyogenic strains are and *Staphylococcus spp* are seen. The study conducted using Amikacin, Ampicillin, Carbencillin, Nalidixic acid and Tetracycline. Extensive studies should be conducted on recurrent infections

Symptoms and organisms associated			
	SYMPTOMS	PRESENCE OR UTI	ORGANISMS ASSOCIATED
1	BURNING SENSATION DURING URINATION BLOOD IN URINE	AFFIRMATIVE	ESCHERICHIA COLI KLEBSIELLA SP
2	FREQUENT URINATION UNABLE TO URINATE WHEN NEED FEEL CLOUDY FOUL SMELLING URINE	AFFIRMATIVE	ESCHERICHIA COLI ENTEROBACTER SP PROTEUS SP PSEUDOMONAS SP
3	STRESS INCONTINENCE BURNING SENSATION DURING URINATING BLOOD IN URINE	AFFIRMATIVE	ESCHERICHIA SP ENTEROBACTER SP NEISSERIA SP
4	FREQUENT URGE TO URINATE	AFFIRMATIVE	ESCHERICHIA COLI
5	STRESS INCONTINENCE	AFFIRMATIVE	STAPHYLOCOCCUS SP
6	FREQUENT URINATION FOUL SMELLING URINE BLOOD AND PROTEIN FLAKES IN URINE	AFFIRMATIVE	PROTEUS MIRABILIS
7	BURNING SENSATION IN THE URETHRAL REGION PAIN IN THE NAVEL REGION	AFFIRMATIVE	STREPTOCOCCUS SP
8	FREQUENT URINATION	AFFIRMATIVE	ESCHERICHIA COLI VIRULENT STRAIN
9	FEVER, RASHES IN THE VAGINAL AREA	AFFIRMATIVE	STAPHYLOCOCCUS SP STREPTOCOCCUS SP
10	CLOUDY OFTEN BROWN URINE, FEVER	AFFIRMATIVE	PSEUDOMONAS SP

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WITHDRAWN

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The Prevalence of Urinary Tract Infections among Male and Female Students of Olabisi Onabanjo University, Ago-Iwoye, Ogun state, Nigeria.

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Background: A total of 200 apparently healthy male and female students of O.O.U. were tested for pathogenic bacteria in their Urinary Tract. The carriage rate of the isolated bacteria among the students was found to be 63% (126 students). The female students had the highest carriage rate 58.7% (74 students) while the male had a carriage rate of 41.3% (52 students).

Methods: The test samples, mid-stream catch, were collected in the sterile labeled universal bottles and were transported to laboratory for immediate analysis and culturing.

The media used was Cystiene Lactose Electrolyte Deficient agar (CLED)

Results: The occurrence of isolated bacteria from urine samples among male students of Olabisi Onabanjo University.

TOTAL NUMBER OF MALES INFECTED (N=52)	ORGANISMS ISOLATED	MICROSCOPY
15	<i>Pseudomonas aeruginosa</i>	Pus cells, epithelial cells, Triple Phosphate crystals, red blood cells
10	<i>Escherichia coli</i>	Epithelial cells, pus cells, calcium Oxalate crystals, bacterial cells
2	<i>Proteus mirabilis</i>	Epithelial cells, Bacterial cells, Pus cells, Red blood cells, Amorphous phosphate crystals
9	<i>Staphylococcus saprophyticus</i>	Bacteria cells, Epithelial cells, Sperm cells
0	<i>Salmonella spp</i>	
4	<i>Streptococcus enterococci</i>	Epithelial cells Pus cells, Bacterial cells, Hyaline Casts, Sperm cells
12	<i>Klebsiella pneumoniae</i>	Pus cells, Epithelial, Bacterial cells, Red blood cells

The occurrence of isolated bacteria from urine sample among female students of Olabisi Onabanjo University.

TOTAL NUMBER OF FEMALES INFECTED (N=74)	ORGANISMS ISOLATED	MICROSCOPY
27	<i>Pseudomonas aeruginosa</i>	Red blood cells, Pus cells, Bacterial cells, Epithelial cells.
12	<i>Escherichia coli</i>	Epithelial cells, Pus cells, Amorphous phosphate crystals
2	<i>Proteus mirabilis</i>	Pus cells, Bacterial cells, Epithelial] Cells, Granular cells, Bacterial Cells
11	<i>Staphylococcus saprophyticus</i>	Pus cells, Red blood cells, Epithelial cells, Triple phosphate Crystals
3	<i>Salmonella spp</i>	Pus cells, Red blood cells, Epithelial cells, Triple phosphate Crystals
0	<i>Streptococcus enterococci</i>	
19	<i>Klebsiella pneumoniae</i>	Pus cells, Red blood cells, Bacterial cells, Granular casts, Yeast cells

Prevalence rates of isolated bacteria from urine samples among male and female students of Olabisi Onabanjo University.

	NUMBER INFECTED	% INFECTED
MALES	52	41.3%
FEMALES	74	58.7%
TOTAL	126	100%

Conclusions: The higher carriage rate recorded in females was found to be due to factors which include inability of females to empty their bladders as completely as done by males, continual contamination of the urethra by the bacterial pathogens from the vagina and rectum, short urethra, passage of bacteria into the bladder during sexual intercourse and the bacterial introduction into the urethra by cleaning back to front after voiding.

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Sensitivity of Antibiotic Resistant *Escherichia coli* and *Staphylococcus spp.* Isolated from Female Patients Suffering from Urinary Tract Infections to Some Selected Medicinal Plants

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Background: About 80% of urinary tract infections (UTIs) arise from *E. coli* and about 5-15% due to *S. saprophyticus*. *E. coli* as a pathogen, is associated with acute gastro-enteritis in infants up to 2 years of age, and infections of the urinary tract, particularly in married women, in girls and in elderly men with prostatic enlargement with over 8.3 million doctor visits in 1997 alone. This study was carried out to investigate the sensitivity of antibiotic resistant *E. coli* and *S. saprophyticus* implicated in urinary tract infections (UTI) in female patients to three important medicinal plants namely, *Tridax procumbens*, *Cryptolepis sanguinolenta*, and *Psidium guajava*.

Methods: Mid-stream urine samples were collected from female patients suspected of having UTI. All of the specimens were initially stained by the Gram method and then plated onto appropriate media and incubated at 37°C overnight. Isolates were then taken through the necessary biochemical tests and their sensitivities to selected antibiotics as well as selected medicinal plants on Mueller-Hinton agar were done using the disk-diffusion method. The zone of inhibition produced by each antibiotic was measured using NCCLS standards. The MICs for the selected medicinal plants were also determined.

Results: Antibigram on these *E. coli* isolates indicated that all of the isolates were resistant to Ampicillin and to Tetracycline. Forty five of the isolates were resistant to Cefuroxime, 42 were resistant to Cotrimoxazole, 37 were resistant to Gentamicin, 16 strains were resistant to Nalidixic acid and 11 of the *E. coli* isolates were resistant to Nitrofurantoin. *T. procumbens*, *C. sanguinolenta*, and *P. guajava*, showed complete bacteriocidal activity against all strains of *E. coli* and *S. saprophyticus* with zones of inhibition ranging from 16.5-25mm at 32%w/v concentrations of the freeze-dried medicinal plant preparations. The MIC for *T. procumbens* was found to be 0.8mg/ml, 1.6mg/ml for *P. guajava* and 3.2mg/ml for *C. sanguinolenta*.

Conclusions: Even though most of the isolates had multiple drug resistance to all of the above mentioned antibiotics, their growth were inhibited by the three selected medicinal plants.

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Understanding Urinary Tract Infections: Nitrosative Stress Resistance in Uropathogenic *Escherichia coli*

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Background: Approximately one in five women will develop a urinary tract infection (UTI) at some point during her life, and of those women 20% will experience a recurrence. Most UTIs are caused by uropathogenic *Escherichia coli* (UPEC). Upon infection by UPEC, levels of nitric oxide and other toxic reactive nitrogen intermediates in the bladder increase sharply, in part to help keep bacterial numbers under control. We are studying the ways in which UPEC withstand nitrosative stress, and evaluating whether nitrosative stress resistance in UPEC has any correlation with site, severity, and/or recurrence of UTI.

Methods: We have found that many UPEC strains display far greater resistance to nitrosative stress than the K12 reference strain MG1655. By

selecting and screening for UPEC transposon mutants that are unable to grow in the presence of acidified nitrite, we have identified genes involved in nitrosative stress resistance. In addition, we are screening clinical UPEC isolates for resistance to nitrosative stress, and correlating resistance data with clinical information regarding site of infection (bladder vs. kidney), and, when available, severity and recurrence of UTI.

Results: Mutation of the bacterial *cad* gene cluster results in loss of significant production of the polyamine cadaverine and increased sensitivity to acidified nitrite. Exogenous addition of cadaverine or other polyamines rescues growth of *cad* mutants under nitrosative stress. The mechanism behind polyamine-mediated rescue from nitrosative stress is unclear, but it is not attributable solely to chemical quenching of reactive nitrogen species or reduction in mutation frequency.

Preliminary results suggest that UPEC strains which are sensitive to nitrosative stress are more often found in kidney infections than bladder infections.

Conclusions: By better understanding the ways in which UPEC overcome natural host defenses, we hope to contribute to better treatments for the millions of women who experience UTIs every year. Because kidney infections tend to be more dangerous than bladder infections, we are also seeking a diagnostic tool to aid clinicians in predicting the probable outcome of infection by a particular strain.

Plenary Session 2-B

Infectious Disease Disparities in Developed Countries

Friday, March 17, 2006, 10:30 am - 12:00 noon

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Congenital Syphilis in the United States, 2003-2004: Exploring Differences among Hispanics Compared to African-Americans and Whites

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Background: Hispanic birth rates are higher than those among African-Americans and Whites. The proportion of Hispanic pregnant women with late or no prenatal care (PNC) is higher than Whites, but lower than African-Americans. In 2004, Hispanics accounted for 42% (145/343) of congenital syphilis (CS) cases, but only 15% (194/1,317) of female primary and secondary (P&S) cases and 26% (2,826/10,923) of total female syphilis cases. To determine reasons for the apparent disproportionate number of CS cases, syphilis cases reported to CDC were analyzed.

Methods: CS cases in birth years 2003-2004 were analyzed for demographics, PNC, and maternal treatment. Female adult syphilis to CS case ratios were calculated for Hispanics, African-Americans, and Whites. Unknown codings for ethnicity were determined for CS (2003-2004) and female syphilis (2004).

Results: Of 760 CS cases reported from 35 states, Puerto Rico, and Washington, DC, 326 were African-American, 322 were Hispanic, and 67 were White. Hispanic mothers were more likely to be < 20 years old (13%) compared to African-Americans (8.3%) or Whites (9.0%). The proportion of mothers who received no treatment before delivery was similar for Hispanics (49%), African-Americans (51%), and Whites (52%). Among treated mothers, the proportion who received adequate therapy was 59% for each race/ethnicity. Having any PNC, the median number of PNC visits, and starting PNC \geq 30 days before delivery were similar for Hispanics (72%, 6.0, 88%), African-Americans (61%, 6.0, 90%), and Whites (70%, 6.0, 88%). Compared to Hispanics, African-Americans and Whites had higher P&S:CS (4.1- and 5.5-fold, respectively) and total syphilis:CS (1.8- and 2.1-fold, respectively) ratios. For cases of CS, P&S syphilis, and total syphilis, ethnicity was missing for 3.5%, 14%, and 18%, respectively.

Conclusions: These data suggest that missing codings for ethnicity may account for some of the disproportionate number of Hispanic CS cases. Research is needed on PNC among women with syphilis, completeness of ethnicity and case reporting of Hispanic female syphilis, possible ethnicity misclassification, and how birth rates and staging of disease relate to Hispanic women with syphilis.

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Disparities in Early HIV Diagnosis, and Prior Health Care and HIV Testing Experiences between Black Women and White Men who Have Sex with Men (MSM)

D. MacKellar, M. Dong, S. Behel; CDC, Atlanta, GA.

Background: Comparing early HIV diagnosis, and prior health care and HIV testing experiences between black women (BW) and white MSM (WMSM), two important groups affected by HIV, might help inform efforts to reduce gender and racial HIV-prevention disparities.

Methods: We conducted a cross-sectional survey from 2003 through 2004 of persons newly diagnosed with HIV infection from selected health-care providers in Los Angeles, CA and Chicago, IL. Participants were interviewed and tested for recent infection using the serologic testing algorithm for recent HIV seroconversion. We evaluated differences between 74 BW and 147 WMSM in early HIV diagnosis, and prior health care and HIV testing experiences.

Results: Before their diagnosis, BW versus WMSM tested for HIV fewer times in their lifetime (median tests: 2 vs. 7; $p < 0.01$) and in the prior two years (0 vs. 2; $p < 0.01$), and proportionally fewer BW were diagnosed within one year of their HIV infection (11% vs. 42%; $p < 0.01$). Before their diagnosis, similar proportions of BW versus WMSM reported having medical insurance (55% vs. 54%; $p = 0.81$) and a regular health-care provider (58% vs. 56%; $p = 0.82$). Of those who had a regular provider, similar proportions of BW and WMSM before their diagnosis visited their provider ≥ 4 times in the prior two years (58% vs. 49%; $p = 0.35$) and wanted their provider to test them for HIV (47% vs. 52%; $p = 0.58$); however, proportionally fewer BW wanted their provider to know their HIV risks (47% vs. 67%; $p = 0.03$); and fewer reported that their provider had ever assessed their risks (24% vs. 52%; $p < 0.01$), ever recommended they should test for HIV (36% vs. 63%; $p < 0.01$), or ever tested them for HIV (33% vs. 55%; $p < 0.05$).

Conclusions: Before their diagnosis, BW had tested for HIV less frequently than WMSM, and consequently, fewer were diagnosed within a year of their HIV infection. Lower disclosure, assessment, or recognition of risks by BW and their providers, rather than lack of access to health care may, in part, account for differences with WMSM in HIV testing and early diagnosis. To help reduce this gender and racial disparity, health-care providers should routinely recommend HIV testing for all patients in clinic populations at increased risk for HIV.

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Pregnancy-associated Listeriosis in Hispanic Women in FoodNet Sites, 1996-2003

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Background: Listeriosis is a serious infection most commonly caused by eating food contaminated with *Listeria monocytogenes*. Each year in the United States, nearly 2,500 persons are infected with *L. monocytogenes* resulting in approximately 500 deaths. About one-third of *L. monocytogenes* infections occur during pregnancy. Infections during pregnancy commonly result in miscarriage, stillbirth, premature delivery, or infection of the newborn.

Foods associated with listeriosis include deli meat and unpasteurized soft cheeses. In recent years, several outbreaks of listeriosis caused by Mexican-style cheese (e.g., queso fresco) made from unpasteurized milk have been identified, predominantly among Hispanic women.

Methods: We examined population-based surveillance data collected via the Foodborne Diseases Active Surveillance Network (FoodNet) from 1996 through 2003 to determine the burden of disease and trends in pregnancy-associated *Listeria monocytogenes* infection. Infections were classified as "pregnancy-associated" if illness occurred in a pregnant woman or an infant <31 days old.

Results: A total of 766 invasive cases (3.6 cases per million population per year) of *L. monocytogenes* infection were ascertained in the surveillance population from 1996 through 2003. Of these, 122 (4.3 cases per million) were pregnancy-associated. From 1996 to 2003, the incidence of pregnancy-associated listeriosis declined by 37%. Pregnancy-associated disease was much more common among Hispanic women of child-bearing age (11.6 cases per million) than among non-Hispanic women of child-bearing age (3.5 cases per million).

Conclusions: Pregnancy-associated listeriosis disproportionately affects Hispanic women. Further declines in listeriosis incidence require continued efforts of industry and government to reduce contamination of the food supply and to educate clinicians and consumers, particularly pregnant and/or Hispanic women, about risks factors for *Listeria* infection.

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Characteristics of Foreign-Born HIV+ Pregnant Women in the United States: Data from the Enhanced Perinatal Surveillance Project 1999-2001

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Background: In the 2000 census, 10% of the US population consisted of foreign-born (FB) persons. Numerous state/local HIV programs have begun to target prevention efforts on HIV/AIDS among FB persons.

Methods: Twenty-two sites participated in the Enhanced Perinatal HIV Surveillance (EPS) Project from 1999-2001. Both population-based sites and facility-based sites were included. EPS records not reporting country or continent of birth were linked with the HIV/AIDS Reporting System. Resulting unmatched records were excluded (n=223). Descriptive analyses for differences between FB versus US-born HIV+ pregnant women were conducted.

Results: Of 6,597 HIV+ pregnant women, 782 (12%) were FB. Over half of the FB women were from 5 countries: Mexico (22%), Haiti (19%), Honduras (6%), El Salvador (5%) and Jamaica (4%). Three-quarters of the US-born women were black compared to half of the FB. While only 10% of US-born women were Hispanic, 43% of FB were Hispanic. Forty-two percent of FB women were married compared to 16% of US-born women. A greater percentage (22%) of US-born women had an injection drug use (IDU)-associated risk (IDU or heterosexual sex with a person with known IDU) for HIV compared to FB women (6%). FB women were more likely to have had any prenatal care prior to delivery compared to US-born women (91% versus 85%); however, a lower percentage of FB women were diagnosed HIV+ prior to pregnancy (41% versus 60%). The percentage of HIV+ live births among FB women (6%) was similar among US-born women (5%).

Conclusions: Significant differences exist in the demographic factors of FB HIV+ pregnant women compared to US-born women. FB pregnant women have different risk factors for HIV and are less likely to be identified as HIV+ prior to pregnancy. These results suggest that HIV test counseling, testing, prevention and treatment services may need to be tailored for FB women at high risk for HIV infection.

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Effective HIV Prevention Interventions for African American Women: Four Models

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Background: African American women experience disproportionate rates of HIV/AIDS compared to other women in the U.S. Culturally-relevant interventions are essential to improving the health of African American women and their families. We will present an overview of four evidence-based HIV prevention interventions designed to reduce risky sexual behavior and increase communication skills. The interventions include Sistering, Informing, Healing, Living, Empowering (SIHLE); Sisters Informing Sisters about Topics on AIDS (SISTA); Real AIDS Prevention Project (RAPP); and Women Involved in Life Learning from Other Women (WILLOW). All of the interventions are part of the CDC's Diffusion of Effective Intervention (DEBI) Project.

Methods: SIHLE targets sexually active African American female adolescents, ages 14-18, in reproductive health clinics; SISTA targets sexually-active women, 18-29 in community-based settings; RAPP targets sexually-active women of reproductive age and their male partners; and WILLOW targets women living with HIV, ages 18-50 in health departments and medical clinics.

Results: In the original study of SIHLE, the intervention group used condoms more consistently in the 30 days prior to the 6 and 12 month assessments and over the entire 12 month period as compared to the control group. When the SISTA project was first implemented, the women in the intervention group increased consistent condom use and sexual communication skills. Women living in high-risk communities that participated in the RAPP intervention were more likely to initiate condom use with steady partners and negotiate condom use with casual and steady partners. In the initial intervention for WILLOW, women in the experimental group reported a decreased rate of unprotected sex and bacterial STD's and improved HIV knowledge and condom use skills.

Conclusions: The interventions discussed have the capacity to reduce HIV risk behaviors and improve communication skills necessary for African American women to improve their health outcomes. Efforts should continue toward the development, implementation, and evaluation of HIV prevention interventions that take into account gender and cultural differences.

Plenary Session 2-C

Impact of STDS on Women

Friday, March 17, 2006, 10:30 am - 12:00 noon

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To Expect not to Plan is A Reality to Unfold

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Background: To determine the awareness, disposition, practices and ethno-cultural factors associated with family planning practices among market women.

Methods: A questionnaire survey of market women in three major markets in Ibadan, a state capital in South-western Nigeria, was conducted between September and November 2005. Questionnaires were administered to 150 market women with a response rate of 99.3%.

Results: There were 5 ethnic Nigerian groups represented with majority being Yorubas (76.5%). About 99.3% of the market women desired to use a form of family planning naming oral contraceptive pills and intrauterine device as their first two choices. 11.4% of the market women were ignorant of family planning methods and 63.1% indicated to have ever used any form

of contraception with a higher proportion stating the period between 1990 and 2000 as the first time of use. On the other hand, 43.0% were currently not using contraception. The prevalence use for Depo-Provera, condoms and oral contraceptive pills was higher, 24.7%, 22.3% and 16.5% respectively. In comparison, the rhythm method and withdrawal methods were ranked lowest at a prevalence of 8.2% and 1.2% respectively. The market women's knowledge was higher for condoms (55.7%), intrauterine device (37.6%) and stated little knowledge on the patch (4.7%) and vagina rings (6.0%).

Conclusions: The knowledge of family planning methods among the market women is commendable but the prevalence of contraception use is still low. The market women appear to prefer contraception with a higher success rate and there was a significant ethnic relationship in the choice of family planning method.

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Risk Factors for Incident *Trichomonas vaginalis* among Women Recruited from STD Clinics

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Background: *Trichomonas vaginalis* is the most common non-viral STD. It has been found to be associated with adverse birth outcomes (premature rupture of the membranes, pre-term delivery, low birth weight) and may also increase susceptibility or transmissibility of HIV. Most studies analyzing risk factors for *T. vaginalis* infection use prevalence data. This study is one of the first to analyze risk factors associated with incident infections.

Methods: We analyzed data from an HIV-prevention trial, RESPECT-2, done in 3 STD clinics in Denver, CO; Long Beach, CA; and Newark, NJ from 1999-2000. Of the 1507 women enrolled, data were analyzed from 1269 women aged 15-39 years who were tested by wet mount or culture at their initial visit for *T. vaginalis* and, made at least 1 follow-up visit. We assessed risk factors for new infection among treated or previously uninfected women at 4 scheduled follow-up visits. Logistic regression was used to identify risk factors associated with incident infection.

Results: An incident trichomonas infection occurred in 13% of women. In women with *T. vaginalis* at baseline, 36% had a subsequent infection compared to 10% in those negative at baseline. Black women had a higher incidence than white women (21% vs. 5% $p < 0.001$) and women aged 35-39 had a higher incidence than women aged < 35 years (23% vs. 12% $p = 0.002$). Risk factors for incident infection included: older age (35-39 years) (OR=2.8, 95% C.I. 1.4-5.9), black race (OR=4.0, 95% C.I. 2.4-6.5), having < 12 years of education (OR=1.6, 95% C.I. 1.0-2.6), being unemployed (OR=1.7, 95% C.I. 1.1-2.7), having had *T. vaginalis* at baseline (OR=3.5, 95% C.I. 2.2-5.7), having symptoms associated with *T. vaginalis* (OR=2.5, 95% C.I. 1.5-4.1), having chlamydia at the current follow-up visit (OR=3.7, 95% C.I. 1.0-9.0), having had gonorrhea at a visit in the past 3 months (OR=3.0, 95% C.I. 1.0-9.0), and having had ≥ 2 sexual partners in the past 3 months (OR=2.4, 95% C.I. 1.5-3.7).

Conclusions: As with other STDs, we found that *T. vaginalis* was associated with multiple partners and previous STD infection. Unlike other STDs, we found that *T. vaginalis* was associated with older age in women. Understanding why this difference exists is an important next step.

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Prevalence of "Chlamydia trachomatis" Among Female Students Attending Health Units at Three Third Level Colleges in Ireland

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Background: *Chlamydia trachomatis* is the second most commonly notified sexually shared infection (SSI) in Ireland. Infection in women is often asymptomatic but may be associated with complications including pelvic inflammatory disease and infertility. Notifications increased from 245 cases in 1995 to 2803 in 2004¹.

To anticipate the need for prevalence data identified by the Health Protection Surveillance Centre, a study was set up to determine the prevalence of *Chlamydia trachomatis* genital infection in a student population.

Methods: All female attendees presenting during one day periods at Student Health Units in 3 institutions in 2 cities were invited to participate. Excluded were those presenting for investigation of SSI or presenting with symptoms suggestive of SSI. Participants self-completed a questionnaire and provided a urine sample. Samples were tested by a PCR based technique (Cobas Amplicor, Roche). Positive results were confirmed by repeat testing and participants were referred for advice as well as screening for coexisting SSIs.

Results: Of the 489 participants, 29 indicated not being sexually active (NSA) and 11 invalid tests returned (presence of inhibitors). Of the 450 participants included in the analysis, 22 tested positive (4.9%). 109 (24.3%) Sexually active female students indicated suggestive symptoms of SSI without presenting for this including 10 (45.4%) out of the 22 Chlamydia positive group. Further multivariate analysis is planned to explore other possible risk factors of Chlamydia infection.

Conclusions: A prevalence of 4.9% *C. trachomatis* infection among sexually experienced female students of whom many unaware of the potential significance of symptoms, urges the need for a programme to detect asymptomatic women.

¹Sexually Transmitted Infections 2004. Annual Summary Report. The Health Protection Surveillance Centre. November 2005.

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The prevalence of bacterial vaginosis in the United States, 2001-2002

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Background: Bacterial vaginosis (BV) is characterized by loss of normal vaginal flora; predominant lactobacilli are replaced by anaerobes and gram negative bacteria. While the cause of BV is unknown, it has been associated with acquisition of sexually transmitted infections adverse reproductive outcomes, and HIV infection. We used data from the National Health and Nutrition Examination Survey (NHANES) 2001-2002 to describe the prevalence of and factors associated with BV in the United States.

Methods: Self-collected vaginal swabs collected during NHANES were used to prepare a Gram stained slide from women 14-49 years of age. Slides were scored using Nugent's criteria. BV was defined as a score of 7-10. SUDAAN software was used for analysis and logistic regression to account for the complex survey design.

Results: Of 2479 women who completed the interview, 1999 (81%) provided an interpretable specimen. The overall prevalence of BV was 27.4% (95% confidence interval 24.5%-30.7%) and significant differences in prevalence were found across race/ethnic groups: 50.3% non-Hispanic blacks, 28.8% Mexican Americans, and 22.4% non-Hispanic whites. Prevalence was

35.9% among women with onset of sex <16 years, 26.8% with onset 16-17 years, 22.8% with onset >17 years, and 17.0% among women who had never had sex. Prevalence was 17.5% for those with one lifetime sex partner, 25.7% for those with 2, 23.6% for those with 3-5 and 36.8% for 6 or more. Women who had douched in the previous month had a prevalence of 45.2% compared with 23.3% for those who had not douched ($p<0.01$). Prevalence was also associated with low educational attainment, poverty, smoking, high body mass index, and having been pregnant. Differences by race/ethnicity remained after adjusting for these significant factors.

Conclusions: This is the first report of BV prevalence from a nationally representative sample of women in the U.S. BV prevalence is high and racial and ethnic disparities remain significant after adjusting for behavioral factors. Further research is needed to understand reasons for the persistent disparities, the cause of BV, to develop better therapies, and to identify women with BV at higher risk of adverse health consequences.

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Confronting the Silent Epidemic: Mobilizing Broad-Based Public Health Partnerships to Reduce the Burden of Sexually Transmitted *Chlamydia trachomatis* among Women in California

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Background: Sexually transmitted diseases, including genital chlamydial infection, impose a disproportionate health burden on women. *Chlamydia trachomatis* is the most common reportable infectious disease affecting an estimated 300,000 Californians annually. Chlamydia can lead to pelvic inflammatory disease and tubal infertility in women and ophthalmia in neonates. The convergence in 1999 of technological advances, research findings, national guidelines, HEDIS adoption, and financial resources created a unique opportunity for a multifaceted public health intervention to reduce chlamydial infection in California.

Methods: Broad-based public-private partnerships were created including (1) a foundation-funded coalition of managed care organizations (MCOs), government, community-based organizations, and academia, (2) the federally funded Infertility Prevention Project, and (3) the state-funded chlamydia awareness campaign. Interventions targeted policy, institutions, clinical providers, and community members.

Results: Successes were achieved in the realms of policy development, health care delivery, and health education. Overall rates of chlamydia screening of young women increased 42% in commercial MCOs and 59% in public MCOs. Public entitlement programs, provider education, and non-clinical screening programs facilitated improved screening. The use of highly sensitive nucleic acid amplification tests increased from 22% to 66%. Legislative change enabled patient-delivered partner treatment to reduce repeat infection. Increased local capacity, social marketing, and school curricula were associated with an increase in public awareness of chlamydia from 75% to 82%.

Conclusions: Broad-based public health partnerships addressing core aspects of disease prevention and control resulted in significant improvement in women's sexual and reproductive health related to chlamydial infection.

Plenary Session 2-D

Women & Influenza

Friday, March 17, 2006, 10:30 am - 12:00 noon

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Hospitalizations with Respiratory Illness among Pregnant Women during Influenza Season, 1998-2002

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Background: Women in their 2nd or 3rd trimester of pregnancy may have increased risk of acute respiratory morbidity during influenza season. The objective of this study is to examine factors associated with hospitalizations with respiratory illness among pregnant women in the United States during periods of influenza activity.

Methods: Data were obtained from the Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample (NIS), the largest publicly available all-payer hospital discharge database. Hospitalizations for respiratory illness and pregnancy were classified using ICD-9-CM codes. Analysis was stratified by delivery status. Logistic regression was used to identify correlates of hospitalizations with respiratory illness among pregnant women during periods of influenza activity. Length of stay and complications of delivery among pregnancy hospitalizations were examined for differences by presence of respiratory morbidity.

Results: During the 1998-2002 influenza seasons, 3.4 of every 1000 hospitalizations of pregnant women included a diagnosis for respiratory illness. Characteristics of pregnancy hospitalizations associated with increased odds of respiratory illness were presence of a high-risk condition for which influenza vaccination is recommended (adjusted odds ratio (OR) 3.2 and 6.0, non-delivery and delivery, respectively), Medicaid/Medicare as primary expected payer of care (OR 1.2 and 1.9, non-delivery and delivery, respectively) and hospitalization in a rural area (OR 1.2, non-delivery). Pregnancy hospitalizations with respiratory illness had significantly longer lengths of stay and higher odds of maternal and perinatal complications than pregnancy hospitalizations without respiratory illness.

Conclusions: Hospitalizations with respiratory illness among pregnant women during influenza season are associated with increased burden for patients and the healthcare system. Intervention efforts to decrease influenza-related respiratory morbidity among pregnant women are needed.

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Impact of Influenza on Respiratory-Related Hospitalizations and Office Visits in Pregnant Women: From Evidence to Public Health Practice

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Background: Influenza (flu) is a leading cause of preventable morbidity worldwide. Although excess deaths occur in pregnant women (PW) during pandemics, the impact of flu on PW during non-pandemic years is unclear, as the contribution of comorbidities (COM) is poorly described and existing data may not be generalizable. While US recommendations direct that all women who will be pregnant during flu season (FS) be vaccinated, Canadian recommendations include only PW with COM. This study determines if FS is associated with increased rates of respiratory-related hospitalizations (RRH) and office visits (RRV) among PW compared to rates in non-flu seasons and

if these rates vary by trimester (TM) and presence of COM.

Methods: This population-based cohort study comprised all Nova Scotia (NS) women who gave birth between 1990-2004. The NS Atlee Perinatal Database (NSAPD) was used to obtain dates of each TM and risk factors for severe flu. Start and stop dates for each FS were obtained from the NS Department of Health. Peri-flu season (PFS) was defined as Nov. 1 to the start of FS, and the 2-week period following FS. Non-flu season (NFS) was defined as days not within FS or PFS. RRH and RRV were obtained from the Canadian Institute for Health Information's Discharge Abstract Database and the NS Medical Insurance Database and linked to NSAPD. Rates of RRH and RRV were calculated for women whose pregnancy (by TM) occurred during a FS and compared with rates among women whose pregnancy was outside FS.

Results: Of 134,212 women who delivered during the study period, 962 (0.7%) had a RRH and 36,880 (27.5%) had a RRV during pregnancy. At all TM, the rates of RRH and RRV were higher during FS than PFS or NFS and were markedly increased in women with COM.

Third Trimester RRH in Women With and Without Comorbidities (rate/10,000 women months)			
	All Women	Women with no comorbidity	Women with at least one comorbidity
Influenza Season	14.4	11.0	45.8
Peri-Influenza Season	10.4	10.1	13.4
Non-Influenza Season	7.8	5.5	28.9

Conclusions: Rates of RRH and RRV are higher in PW during FS, compared to PFS and NFS, even in women without COM. In PW without COM, increased rates in PFS raise the possibility that other respiratory viruses are contributing to RRH in this group. Women with COM are more likely to experience severe respiratory illness during flu season than those without COM and rates in FS are much higher than in PFS in this group; aggressive efforts should be made to ensure that all PW with COM are immunized.

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Survey of Knowledge, Attitudes, and Behaviour Regarding Influenza Vaccination in Pregnancy and Childhood

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Background: Although pregnant women are at high risk for severe influenza infection during pandemics, it is not clear whether they are at risk during normal influenza seasons. We explored the attitudes of Canadian women to determine whether implementation of a universal annual influenza immunization program of all pregnant women similar to that recommended in the United States would be successful in Canada.

Methods: A self-administered questionnaire, designed for this study, was distributed to all pregnant women receiving routine prenatal care in the obstetrics clinics of the IWK Health Centre and local physicians' offices. The survey encompassed demographic information, including previous vaccination behaviour, as well as questions designed to elicit knowledge, attitudes, and behaviours regarding influenza vaccine during pregnancy.

Results: Of the first 445 respondents, 36% agreed or strongly agreed that pregnant women are at higher risk of severe illness from influenza than women who are not pregnant. However, 51% of respondents did not think the vaccine was safe in all stages of pregnancy; 41% agreed or strongly agreed that it was safer to wait until after the first 3 months; and 30% felt it was best to avoid all vaccines while pregnant. Despite 60% of respondents stating that they would have the vaccine while pregnant if their doctor recommended it, and 54% citing their doctor/nurse as their primary source of vaccine information, only 15% said their doctor discussed influenza vaccination during their pregnancy. Those women whose doctors discussed influenza vaccine during pregnancy had higher overall knowledge scores ($p < .0001$) and were more likely to disagree or strongly disagree with the statement that

it is best to avoid all vaccines while pregnant.

Conclusions: These data indicate that Canadian women will be more likely to accept the influenza vaccine during pregnancy if recommended by their health care provider. Increased educational efforts directed towards health care professionals and the public regarding the safety and importance of influenza vaccination during pregnancy is warranted to ensure that pregnant women are provided information appropriate to make an informed decision.

Poster Session 2

Perinatal-Preventing HIV in Women

International Ballroom 5

Friday, March 17, 2006, 1:00 pm - 2:00 pm

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Incidence of Recent Hepatitis C Infection in Aboriginal versus Non-Aboriginal Canadian Females, 1999-2004

J. Wu¹, H. Wu¹, T. Wong¹, A. Andonov², Q. Li¹, T. Donaldson¹, K. Dinner¹, J. Siushansian¹, S. Paton¹, All EHSSS sentinel Sites involved;

¹Public Health Agency of Canada, Ottawa, ON, CANADA, ²Public Health Agency of Canada, Winnipeg, MB, CANADA.

Background: Hepatitis C virus (HCV) infection is a leading cause of chronic hepatitis, cirrhosis and hepatocellular carcinoma in North America. Little is known about the epidemiological trends of recent HCV infection in Aboriginal Canadian females. The purpose of the present study was to determine trends in disease incidence and patterns of HCV transmission in Aboriginal Canadian females related to that observed for non-Aboriginal Canadian females.

Methods: We analyzed the cases (age ≥ 15 years) with recent HCV infection reported to Enhanced Hepatitis Strain Surveillance System during period 1999-2004 from six health regions in Canada. Demographic, clinical, and potential risk factor information on HCV infection was collected using standardized questionnaires.

Results: During the period 1999-2004, the reported incidence of recent HCV infection declined in both Aboriginal and non-Aboriginal Canadian females. Poisson regression analysis revealed that the incidence rate of recent HCV infection was 7.0 times higher among Aboriginal females than among non-Aboriginal females (95% CI 5.1-9.5). The disease incidence peaked at 20 to 29 years of age, confirming injection drug use (IDU) as the most frequently reported route of transmission. Aboriginal female cases were significantly more likely to report IDU (79% versus 62%, $p=0.05$), than non-Aboriginal female cases. Of the female cases with newly acquired HCV infection attributed to IDU, thirty-seven percent reported having sexual partners with a history of IDU.

Conclusions: Our findings emphasize the urgent need for an appropriate and effective public health strategy including planned and implemented prevention programs in partnership with Aboriginal Hepatitis C prevention organizations, to reduce HCV incidence in Aboriginal females. Education and intervention programs among high-risk females should address the risk factors not only for individual behaviours but also for the relevant behaviours in sexual partnerships.

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Cytomegalovirus Infection at the Maternal-fetal Interface

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Background: CMV is the most common intrauterine infection associated with congenital disease. Seroconversion occurs in sexually active women and those who care for toddlers. Women with primary infection during gestation have a 50% transmission rate and deliver babies with intrauterine growth restriction, severe birth defects and long-term sequelae. In contrast, seropositive women with reactivated infection deliver asymptomatic babies with few long-term defects. In several studies, we focused on the biology of CMV infection at the uterine-placental interface. The human placenta is composed of chorionic villi that attach the fetus to the uterus and float in maternal blood that nourishes the developing placenta. In this immune tolerant environment, innate immune cells protect the fetal hemiallograft from maternal rejection and infection. A niche for CMV replication during gestation, the decidua transmits virus to the adjacent placenta. Whether infection occurs depends on the level of virus replication, neutralizing titer of maternal IgG (high- or low-avidity antibodies) and coinfection with bacterial pathogens. The syncytiotrophoblast covering floating villi exchanges nutrients, waste and gasses between maternal and fetal compartments and transcytoses IgG for passive immunity.

Methods: PCR for CMV DNA, immunofluorescence confocal microscopy, virus neutralization assays and fluorescence in-situ hybridization on placental biopsy specimens from consensual abortions and uncomplicated deliveries at term.

Results: Studies of naturally infected placentas and explant cultures infected in vitro indicate that complexes of IgG and CMV virions are transported across the syncytiotrophoblast by the neonatal Fc receptor to villus cytotrophoblasts. Immune complexes are internalized by macrophages and/or infection spreads to stromal cells in the villus core and fetal leukocytes.

Conclusions: Our results could explain the correlation between congenital CMV infection and low-avidity IgG. They also provide a mechanism for the report that CMV-specific hyperimmune globulin may be effective in the treatment and prevention of primary congenital infection during pregnancy.

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Microbial Antigen Stimulation Leads to Corticotrophin Releasing Hormone (CRH) Expression in Trophoblasts

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¹Cedars-Sinai Medical Center, Los Angeles, CA, ²University of Newcastle, Newcastle, AUSTRALIA.

Background: Preterm birth is a major public health problem, has life-long repercussions, and costs more than 4 billion dollars/year. Infection is found in majority of preterm deliveries; however the mechanisms involved in infection-associated preterm delivery are not clearly understood. Toll-like receptors (TLR) mediate microbial antigen induced immune responses in female reproductive tract, and both maternal and fetal polymorphisms of the TLR4 gene are associated with spontaneous preterm labor in certain populations. CRH, the hypothalamic peptide that controls function of the pituitary-adrenal axis in response to stress, is expressed in human placenta and plays a major role in controlling human parturition. Interestingly, TLR activated signaling cascades to induce immune responses are also involved in placental CRH expression. We now hypothesize that intrauterine infection leads to increased placental CRH expression and regulates initiation of parturition.

Methods: In order to test this hypothesis, we stimulated culture differentiated JEG3 syncytiotrophoblast cell line with purified enteric lipopolysaccharide (LPS, TLR4 ligand), Gram positive bacterial antigen, peptidoglycan (PDG, TLR2 ligand), LPS-free chlamydia heat shock protein 60 (cHSP60, TLR4 ligand) and bromo-CAMP (as positive control) and measured CRH mRNA (RT-PCR) and protein expression (EIA). In order to study the signaling cascades involved in microbial antigen induced CRH expression, we transiently transfected JEG3 cells with CRH-luciferase and B-galactosidase constructs and either dominant negative (DN)-MyD88, or empty vector using

Fugene6. Luciferase activity was measured using a luminometer. Calorimetric galactosidase assay was performed to correct for transfection efficiency.

Results: We observed that stimulation of JEG3 cells with TLR2 and TLR4 ligands led to CRH mRNA and protein expression, and induced luciferase activity, and that expression of DN-MyD88 blocked LPS-induced CRH expression in a dose dependent manner.

Conclusions: In addition to inducing inflammation and apoptosis, intrauterine infection may lead to trophoblast CRH expression and regulate timing of delivery.

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Molecular and Immunobiological Characterization of a *Toxoplasma gondii* Isolate from Congenital Toxoplasmosis in Serbia

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Background: Despite its capacity for sexual reproduction and global distribution, *Toxoplasma gondii* has a highly clonal structure, with all known isolates belonging to three distinct clonal types. Congenital toxoplasmosis, a major clinical entity caused by *T. gondii*, has been associated with type-I and type-II strains. We present the results of the first characterization of a *T. gondii* strain isolated from congenital toxoplasmosis in Serbia.

Methods: The GJL strain was isolated from the umbilical blood of a 24-week old fetus by bioassay in mice. Genotyping was performed by PCR-RFLP using a set of nested PCR markers (5'SAG2, 3'SAG2, BTUB, SAG3, and GRA6). For immunobiological characterization, groups of 60 Swiss Albino mice were perorally inoculated with 8 brain cysts of the GJL and the typical type-II Me49 strain per mouse; 6 mice per group were killed at days 3, 7, 14, 21, 28, 42, 56, 90, 135 and 180 post-infection, and blood samples individually tested by ELISA for IFN- γ , IL-12 and IL-10. Histopathology was performed by H&E and PAS staining at d14 and 56 p.i.

Results: RFLPs at all four independent loci showed that the GJL strain possessed a type II genotype. The cytokine pattern in mice infected with parasites of the GJL strain was similar to that elicited by Me49, with highly elevated IFN- γ , IL-12 and IL-10 by d7, but decreasing thereafter. By d14, a significant decrease occurred in IFN- γ (P=0.0004 and P=0.0099), and IL-12 (P=0.0037 and P<0.0001), respectively for GJL and Me49. This decrease was particularly remarkable for IL-12, which fell below baseline (P=0.012 and P=0.017, respectively for GJL and Me49), but was subsequently restored to control levels. Furthermore, both strains induced similar pathology, characterized by pneumonia and hepatitis in acute infection, and by hepatitis and severe meningoencephalitis, associated with numerous brain cysts, in chronic infection.

Conclusions: The GJL strain isolated in Serbia has a type-II genotype and infection induces both an immunological response and pathology similar to the reference type-II strain, lending further evidence for the predominant involvement of type-II strains in the etiology of congenital toxoplasmosis.

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Placental Malaria in Pregnant Women in Aba and Okigwe Towns of Southeast Nigeria.

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Background: Malaria poses a serious threat to pregnant women in endemic regions. The phenomenon of Placental Malaria has been suggested to increase this risk which includes pre-term births, low birth weight, spontaneous abortion, severe anaemia and pulmonary oedema.

Methods: A study of Placental Malaria in pregnant women was carried out in Aba and Okigwe Towns of Southeast Nigeria. A total of 500 women had their post delivery placenta examined for Malaria parasites. An incision was made into the placental big vein and blood obtained was screened for Malaria parasites using the thick and thin blood smears.

Results: Of the 500 women examined 190 (38%) were positive for placental Malaria. Okigwe had 106 (48.18%) of the 220 examined infected while Aba had 84(30%) of the 280 examined infected. Only trophozoites and gametocytes of *Plasmodium falciparum* were observed in the smears. Age was significant statistically ($p>0.05$) as women of age 20 and less years were most infected. Primigravidae women had the highest prevalence of 50% with 100 out of 200 examined being infected. This was also statistically significant ($p>0.05$). Occupation and social standing were also significant factors as students, teachers and health workers recorded low infection levels of 25% and below as against traders and complete housewives who had 51.11% and above.

Conclusions: The significance of these results in relation with the environment were discussed. Malaria still poses a great danger to pregnant women and the ability of *falciparum* Malaria to sequester in the placenta poses still more danger.

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Congenital Tuberculosis - A Case Report from Chennai, India.

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Background: Congenital *Tuberculosis* is uncommon in spite of wide prevalence of *Tuberculosis* in developing countries. We report a case of congenital *Tuberculosis* in a 29-day-old child who contracted the disease from its apparently normal mother.

Methods: A 29-day-old Full Term Normal Delivery male infant was admitted to the department of Pediatrics in our institution with a history of high grade fever, mainly in the night, cough and poor feeding since 10 days of age. On examination, he was found to be a pale, malnourished infant weighing 2.4 kg. He was dyspnoeic and he had subcostal and intercostal recession with coarse crepitations all over the chest. Abdomen was soft and distended. Liver was 3 cms below the costal margin. We performed chest radiograph, Mantoux test, Ziehl-Neelsen staining and culture of the gastric aspirate, histopathological examination of endometrial curettage of the mother and staining & culture of the same. With appropriate antitubercular chemotherapy, the child recovered completely. The mother was also treated simultaneously.

Results: Chest radiograph showed bronchopneumonia. Mantoux 12 mm reactive. Ziehl- Neelsen staining of the gastric aspirate showed plenty of acid-fast bacilli. Histopathological examination of endometrial curettage of the mother showed Tubercular granuloma. Ziehl-Neelsen staining of the same showed acid-fast bacilli and culture yielded growth of Tubercle Bacilli.

Conclusions: In developing countries like India, the incidence of *Tuberculosis* is very high and a significant number of pregnant women may have active *Tuberculosis*. Hence it is important that pregnant mothers in developing countries be screened for active *Tuberculosis* in order to prevent the risk of transmission to the infant.

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Evaluation of the Microbial Effects of Intrauterine Contraceptive Devices on Reproductive Health

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Background: The frequency of reproductive abnormalities among the Nigerian women of childbearing age has increased in the last ten years to which serious concerns have been expressed in many health discourses. Many factors are suspected as the main causes with little or no concrete evidence to support the assumptions. The main purpose of this paper is to evaluate the microbial effects of intrauterine contraceptive devices (IUCD) on reproductive health in women that have used or are still using these contraceptive devices.

Methods: Specially devised questions, structured interviews, and extensive peer-reviewed literatures are used in this evaluation.

Results: There was a marked lack of women's knowledge as regards preventive tests including cervical Pap smear with some statistically significant improvement after interview and counseling. Infectious complications in women using an IUCD are more frequent if the threads lead from the uterine cavity to the vagina.

The use of IUCD is relatively higher in younger women, higher compared to older women. The prevalence of pathogens is in parts associated with sexually transmitted diseases (STD) and reproductive tract infections (RTI). Among the young women, bacterial vaginosis occurs commonly in both sexually experienced and inexperienced young women and differs by education and individual lifestyles. Prolonged use of contraceptive drugs are found to contribute extensive to the proliferation of pathogenic microbes with associated increased risk of abnormal reproductive abnormalities such as childbearing difficulties, irregular menstrual cycles, microbial infections including *Trichomonas vaginalis*, *Candida albicans* and bacterial vaginosis.

Conclusions: It is believed that cervical cytology, both identification of the organism or of characteristics cellular changes, can easily help to reduce the frequency of the health effects of IUCD in women of childbearing age. Compliance to WHO risk assessment algorithm and alternative risk scores for the detection of cervical infections in women are encouraged.

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Evaluation of Prophylactic Use of Doxycycline After Curettage and Manual Vacuum Aspiration in Incomplete, Non-Septic, Spontaneous Abortion: A Randomized Trial

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Background: If one considers that normally about 15% of clinically established pregnancies will end in abortion, it is clear that managing abortion cases is a common problem, which takes up a significant amount of time and resources of the health services.

Methods: This is a prospective randomized controlled trial (no blinding, prophylaxis versus no prophylaxis). Patients presenting with nonseptic, spontaneous, incomplete abortion were recruited, with the following criteria: pregnancy ≤ 12 weeks, no clinical signs of genital infection, hemodynamically stable, no antibiotic treatment during the 3 weeks before the abortion, and no suspected allergic reactions to tetracyclines. Participants were allocated randomly to 2 groups: 1) antibiotic or treatment group (400mg doxycycline), and 2) no treatment or control group; and received either aseptic curettage or manual vacuum aspiration (MVA) procedures. At follow-up, a diagnosis of infectious morbidity will be recorded if any 2 or more of the following signs or symptoms are found: 1) pelvic inflammatory disease (PID), 2) uterine, adnexal, or cervical tenderness, and 3) leukocytosis $>15,000/\text{cu mm}$.

Results: 240 patients were randomized. 46/240 patients presented with signs and symptoms of PID after the uterine evacuation, giving a postoperative PID rate of 19.1%. Majority of the patients belonging to the control group (42/123=34.1%) developed more infectious morbidity as compared to the doxycycline group (4/117=3.4%). Disregarding treatment, an infection rate of 10.55% was recorded in the group with *previous* PID, as compared with 8.18% in the group *without previous* infection ($\text{RR}=1.29$); more infectious morbidity was likewise noted amongst those group of patients who have had more than two sexual partners ($\text{RR}=1.41$).

Conclusions: In our population of patients with incomplete, nonseptic, spontaneous abortion, prophylactic doxycycline prior to curettage or MVA decreased the rate post-operative pelvic infection. Prophylactic antibiotics proved to be a protective factor, reducing the rate of complications, most especially noted to those group of patients who had previous history of PID and those who had multiple sexual partners.

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Use of Dried Blood Spot Specimen in the Detection of Human Immunodeficiency Virus Type 1 Infection by the Polymerase Chain Reaction

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Background: This research focused on diagnosing HIV-1 infection by an in-house nested-PCR assay using DBS specimen.

Methods: 59 HIV-1 positive samples of IDUs and 22 HIV-1 negative samples of healthy persons collected freshly EDTA anticoagulant whole blood were respectively dropped on the filter paper(903# S&S) to preparing DBS specimen and also reserved the corresponding whole blood. A total of 10µl of DNA solution extracted from whole blood or from DBS was used for in-house nested PCR to amplify parts of the HIV-1 env, pol and gag genes. The result of HIV-1 antibody testing was as the golden standard of diagnosis. At least two parts of the HIV-1 three genes were positive if the β-actin gene was amplified, the specimen were considered HIV-1 positive. The results obtained on DBS by the three PCR assays were compared to the results of nested PCR on whole blood.

Results: All of 22 HIV-1 negative specimens of whole blood and DBS were negative, and showed 100% specificity (95% confidence interval [CI] 95.93%--100%). Sensitivity of DBS by the three nested PCR assays was 93%(95%CI 89.08%-96.92%), compared to the 94%(95%CI 89.69%-98%) of the sensitivity of nested PCR on the whole blood. There was not statistically difference between the two kinds of specimen in the diagnosis of HIV-1 infection ($P>0.01$).

Conclusions: DNA genome extracted from DBS specimen can be amplified by in-house nested-PCR to diagnosing HIV-1 infection. But there are much less HIV-1 pro-viral DNA in three 3-mm discs DBS(absorbed 6.6µl whole blood) than 200µl whole blood. To enhance detecting probability of HIV-1 DNA on DBS, it is necessary to quadruplicate and triplicate nPCR tests. Moreover, this method could detect HIV-1 sequences of multiple subtypes including strains prevalence in China, HIV-1 M group subtype A, B, C, D, CRF01-AE, F, G, H reference strains, but also amplify N and O group strains. DBS on filter paper provide a practical to sample processing in remote area or difficulty in whole blood collection of HIV-1 positive patients, furthermore, gave a reliable way early diagnosis of HIV-1 infection in children born to HIV-infection mothers.

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Rapid HIV Testing at Labor & Delivery: Identifying the Need and Strategies to Decrease Maternal to Child Transmission of HIV

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Objective: To examine current practice of HIV testing of women scheduled to deliver at Baystate Medical Center (BMC), a tertiary hospital in western MA with 4500 deliveries a year. To develop an intervention aimed at improving current practice, assess the need for rapid HIV testing, and evaluate the effectiveness of the intervention.

Background: BMC serves Hampden County which has among the highest rates of people living with HIV/AIDS in the state - Holyoke and Springfield rank second and fourth respectively.

Identification and treatment of pregnant women with HIV is crucial to preventing maternal to child transmission of HIV. The CDC and ACOG Committee on Obstetric Practice recommend the use of rapid HIV testing in labor for women with undocumented HIV status. Initiation of maternal intrapartum antiretroviral therapy followed by neonatal therapy is recommended, reducing the risk of transmission from 25% to 10%. Rapid HIV testing can be used to identify HIV infection in women who arrive at L & D with undocumented status and provide an opportunity to offer prophylaxis to mother and infant.

Methods: A retrospective chart review was done of the Women's Evaluation and Treatment Unit (WETU) prenatal records. WETU serves as a triage unit prior to admission to L&D. The ACOG obstetric records are sent to WETU by admitting obstetricians by 28 weeks gestational age and then again at 36 weeks gestational age. Charts reviewed were limited to a sample from private OB providers. Data collection included: location patient received care, date of test and HIV result. Chart review was completed by a single reviewer.

After the initial chart review, strategies were developed to improve clinical practice and address the challenges of introducing rapid HIV testing in WETU. A second chart review was completed 5 months later which showed significant improvement in documentation of HIV status..

	First Chart Review-5/05	Second Chart Review-10/ 05	Percent Change
Total charts reviewed	88	97	
No result recorded/no date recorded	35 (40%)	23 (24%)	16% decrease
Declined initial test/no retest offered	15 (17%)	11 (11%)	6% decrease
Negative result/no date recorded	16 (18%)	8 (8%)	10% decrease
Negative result per pt in a prior pregnancy	4 (5%)	1 (1%)	4% decrease
Negative result/date recorded	18 (20%)	46 (47%)	27% increase
Tested but no result recorded in chart	0	8	8% increase

Conclusions: Multiple disciplines need to collaborate to successfully implement rapid HIV testing in L&D settings. This project addresses the importance of HIV testing during pregnancy and the necessity for rapid HIV testing at the time of labor and delivery to prevent maternal to child transmission of HIV.

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Descriptive Profile of HIV+ Pregnant Women Who Received Antiretroviral Treatment during 2004 in Puerto Rico

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Background: HIV/AIDS in women and children is of Public Health importance given that the health status of women and children is an indicator of the health status of a population besides carrying a social and economical burden. Furthermore, there is treatment available to prevent infection to the child and give a better life expectancy to the mother. To describe the positive outcome of an appropriate and timely treatment provided to mother and child, a descriptive analysis of pregnant women who received antiretroviral treatment in Puerto Rico in 2004 was performed.

Methods: This descriptive analysis was performed using the SPSS program and data from the Puerto Rico Pediatric AIDS Comprehensive Care and Family Network Program regarding HIV+ pregnant women, who received antiretroviral treatment during 2004. The analysis included percent distribution by age, educational level, previous pregnancies, pre-natal care, risk factors, antiretroviral treatment status and child seronegativity.

Results: Of the 80 cases of HIV+ pregnant women who received antiretroviral treatment in 2004, the highest number of cases was in the group:

- 20-24 years old (26.3%).
 - That reported 10-12 years as the highest educational level obtained (25%).
 - That reported receiving pre-natal care (83%).
 - That completed the antiretroviral treatment (83%).
 - That reported sexual contact with heterosexual male as risk factor (63.2%).
- Additionally
- 7.5% of these women, reported vertical infection as risk factor (83.3% of them where in the 15-19 years old group).

-19% of the women in the 20-24 years old group and 10% who reported 10-12 years as the highest educational level obtained also reported not getting pre-natal care.

-2.53% perinatal transmission rate was observed in the year 2004.

In the group who reported previous pregnancies (37 cases)

-2.7% reported a previous child HIV⁺.

-5.4% reported not getting pre-natal care in current pregnancy.

Conclusions: This profile indicates that pre-natal care needs more promotion among women in reproductive ages and that most of the cases occurred in young women with low educational level. However, more than 80% of these women finished their antiretroviral treatment in Puerto Rico for the year 2004.

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Is There Sex Discrimination in AIDS-Associated Kaposi's Sarcoma?

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Background: Human immunodeficiency virus type 1 (HIV-1) infected men have a 3-fold increased risk of acquired immunodeficiency syndrome Kaposi's sarcoma (AIDS-KS) compared to HIV-1 infected women in sub-Saharan Africa despite similar KSHV and HIV-1 seroprevalence in men and women. Since the reasons for gender-related differences in AIDS-KS risk are unknown, we evaluated the hypothesis that clinical, immunological and virological markers of HIV-1 and KSHV disease differ in African women and men with AIDS-KS.

Methods: 604 AIDS-KS cases were evaluated in the Parirenyatwa Hospital KS Clinic in Harare, Zimbabwe between 1998 and 2001. All cases had histologically confirmed KS disease and a positive HIV-1 serology. Participants were interviewed about symptoms, a physical exam and chest x-ray were performed to determine KS clinical stage, and CD4⁺ lymphocytes and KSHV DNA in plasma and PBMC were measured.

Results: There were 436 male and 166 female AIDS-KS cases. In a univariate analysis, female AIDS-KS cases were younger than male cases (median 33 versus 38 years; $P < 0.001$) and were more likely to have systemic symptoms (odds ratio 1.9; $P = 0.002$), but clinical KS disease stage, history of previous or current chemotherapy, CD4⁺ lymphocyte count, CD4⁺/CD8⁺ ratio, and peripheral blood KSHV load were similar. Since women were significantly younger than men, a case-control comparison in which 165 males were matched by age to 165 females was performed. After controlling for age, there were no significant differences in CD4⁺ lymphocyte count, KS disease stage, or peripheral blood KSHV DNA concentration between men and women, but an increased frequency of reported systemic symptoms in women remained (odds ratio 2.1, $p=0.001$).

Conclusions: The proportion of men and women with AIDS-KS (3:1 ratio) is consistent with previous studies in Zimbabwe and other African countries. The finding that female AIDS-KS cases were younger than male cases is likely due to an earlier age of HIV-1 infection in Zimbabwean women. Although women were more likely to report systemic symptoms compared to men, we did not find other differences in AIDS-KS or HIV-1 disease markers between male and female AIDS-KS cases.

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Web-based Survey of HIV and STD Risk Factors among Women Attending Historically Black Colleges and Universities in the Southeast

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Background: Recent data indicate that minority women attending HBCUs may be facing an increased risk of acquiring HIV and STIs. To guide the development of culturally-appropriate HIV prevention programs we designed and implemented an incentive-driven, web-based survey of women's perceptions, behaviors, and characteristics associated with increased risk of HIV/STD and barriers to HIV testing.

Methods: The selection of questionnaire items was guided by themes identified through discussions with female students between the ages of 18 and 25 years attending HIV outreach programs. The assessment covered the types of health and wellness services (e.g., nutrition, exercise, sexuality, and relationship, etc.) that female students value the most and ways to encourage HIV counseling and test-seeking behavior. Recruitment strategies included campus newspaper and radio announcements, distribution of flyers and tent cards, solicitation through student organizations, and word-of-mouth promotion during campus events. Each participant provided informed consent and received a \$10 gas credit card for completing the survey. We obtained approval from the NCCU Institutional Review Board and pilot-tested hard copies of the questionnaire and the visual display of the survey on different computer platforms. We used SAS 8.0 to analyze contingency tables and calculate Chi-square statistics and the 95% Confidence Intervals to examine responses by subgroups.

Results: Approximately half of survey respondents reported having been tested for HIV and using condoms at last sexual encounter. Having received information on HIV and STDs seemed to influence condom use but not the number of sexual partners. Further analyses will be conducted to examine subgroups in greater detail.

Conclusions: This is the first time we have used a web-based instrument to gather sensitive data from students at this HBCU. Results highlight the relative value of condom promotion versus preaching abstinence among college-aged students on campus.

The results identified women's health needs and concerns, knowledge and attitudes towards HIV and HIV-related behaviors.

Plenary Session 3-B

Innovative Diagnostics

Friday, March 17, 2006, 1:00 pm - 2:00 pm

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Real-time PCR Testing on the GeneXpert for Group B Streptococcus Screening is Both Rapid and Sensitive Compared to a Traditional Culture-based Method.

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Background: Group B *Streptococcus* (GBS) is a leading cause of neonatal sepsis, with transmission occurring during birth from GBS colonized women to their newborn infants. In 2002 CDC released revised guidelines for the prevention of perinatal GBS disease, which recommend universal prenatal screening of all pregnant women at 35-37 weeks' gestation for vaginal and rectal GBS colonization. Unfortunately, not all women are screened prior to delivery, leaving their GBS status unknown. Since traditional GBS culture requires 2-3 days to complete, these women are managed by risk-based assessment, which has limited effectiveness, to determine whether intrapartum antibiotic prophylaxis is needed. Therefore, having a rapid means of screening women with unknown GBS colonization status when they present to a labor and delivery unit would provide valuable information to physicians.

Methods: The GeneXpert® (GX) instrument from Cepheid automates the entire GBS testing process, including sample preparation, and real-time PCR; results are completed in 70 minutes. The GX GBS assay was evaluated in a multi-center study of 243 pregnant women, including 81 intrapartum and 162 antepartum patients. Eligible women were consented and vaginal/rectal swab-based specimens collected for both GX and culture (Cx) analyses. The swab collected for GX analysis was tested as soon as possible, or within 4 hr of collection. The swab collected for bacterial culture was immediately

placed into Lim or Todd-Hewitt broth and incubated for 18-24 hr at 35°C. Cultured broth was inoculated onto a 5% sheep blood agar plate and an NEL GBS plate that were incubated for 18-24 hr at 35°C. Suspicious colonies were confirmed using direct agglutination and GBS-specific antisera.

Results: Table 1 illustrates the results of this comparison. Compared to Cx, the GX demonstrated 95.9% sensitivity and 94.7% specificity.

Conclusions: The GX-GBS assay is a rapid and accurate means of screening pregnant women for their GBS colonization status, with testing easily implemented on a 24-7 basis.

Table 1.	Cx-Positive	Cx-Negative	Cx Total
GX-Positive	47	10	57
GX-Negative	2	180	182
GX Total	49	190	239

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Early Infant Diagnosis of HIV using DNA PCR on Dried Blood Spots in Botswana's National Program for Prevention of Mother to Child Transmission of HIV

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Background: Diagnosis of HIV in infants is challenging in resource-limited settings because of the need for PCR technology and the difficulty of obtaining, transporting, and storing blood samples. Dried blood spots (DBS) provide accurate DNA PCR results and are easy to store and transport. Botswana's public health system provides prevention of mother to child transmission of HIV (PMTCT) services and antiretroviral (ARV) therapy, but early infant diagnosis has not been widely available. The rate of transmission of HIV to infants receiving PMTCT services is unknown.

Methods: We trained government health staff (doctors, nurses, and midwives) in 10 public facilities to collect DBS by pricking heels or toes. Training included one classroom day and practical training on 4-5 infants per provider. Infants age 6 weeks to 17 months who were HIV exposed or ill were eligible for testing. Samples were sent by courier to Botswana's national HIV reference laboratory. Roche Amplicor 1.5 DNA PCR was performed on DBS using a manual extraction technique.

Results: PCR on 61 DBS created from whole blood samples in the reference lab had 100% concordance with the result obtained directly from whole blood. Quality control and proficiency testing panels sent by CDC have also shown 100% correct results. From June to November 2005, 1600 DBS samples were collected from infants. Of all samples, 2% were rejected by the laboratory, usually because of labeling errors. More than 90% of infants had received at least one intervention for PMTCT. Of infants tested in clinics, most were healthy, and 4% were HIV positive. Of these, 80% have been evaluated for ARV therapy. Of infants tested in the regional referral hospital, many were sick inpatients, and 13% were HIV positive.

Conclusions: Collection and testing of DBS with Roche Amplicor 1.5 is a feasible strategy for early infant diagnosis of HIV in an African PMTCT program setting. Public health staff were easily trained to collect dried blood spots with few technical errors. The Botswana program appears to be reducing vertical HIV transmission as expected, and most healthy, HIV-exposed outpatient infants are HIV negative. Scale-up of infant DBS PCR in Botswana is planned for 2006.

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Rapid HIV Testing Implementation in Labor and Delivery Settings to Reduce Perinatal HIV Transmission: Methods Used and Lessons Learned.

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Background: The Florida Department of Health, the University of South Florida and the University of Miami, Miller School of Medicine have collaborated to develop and launch a statewide model for implementing rapid HIV testing on labor and delivery and to provide technical assistance and hands-on training for the 146 obstetrical hospitals and birthing centers in the state of Florida. The decision to implement this initiative is based on the findings of the CDC's Mother Infant Rapid Intervention at Delivery (MIRIAD) study that demonstrated that rapid testing in labor and delivery was not only feasible but was also necessary to capture women who present at labor and delivery with undocumented or unknown HIV status.

Methods: A strategic approach was developed using methods from the MIRIAD study as well as from the successful model designed by the state of Illinois. This model is a novel approach that was necessary to gain access and buy-in from hospitals and birthing centers. The model includes multiple phases: initiating contact with the head of labor and delivery, introducing the rapid testing concept, meeting with critical decision makers, training sessions for labor and delivery staff and longitudinal technical assistance for the laboratory, labor and delivery, nursery, pharmacy and social work staff. The program includes an evaluation component that assesses implementation variables at two intervals post-intervention.

Results: Since July, implementation of rapid testing on labor and delivery has been initiated at 146 obstetrical hospitals and birthing centers in Florida. Hospitals are currently in different phases of implementation with 22 hospitals having fully implemented rapid testing.

Conclusions: Women who are HIV positive and pregnant and do not receive prenatal care or are not tested for HIV during pregnancy are missed opportunities that can be identified with a Rapid HIV test. Routinely offering Rapid testing to all women who present in labor with an unknown HIV test will allow for greater opportunities to provide prophylaxis for the prevention of perinatal HIV transmission.

Plenary Session 3-C

Scientific Advances in Preventing Mother to Child Transmission of HIV

Friday, March 17, 2006, 1:00 pm - 2:00 pm

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Evidence Supporting Distinct Mechanisms for Intrauterine and Intrapartum HIV Mother-to-Child Transmission

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Background: Conflicting data have been published about mother-to-child transmission (MTCT) and if maternal characteristics and timing of transmission have distinct barriers to or mechanisms of transmission. The purpose of this study was to correlate subtype C env gene diversity in and between mothers and their infants with the presence and timing of HIV-1 transmission or the absence of transmission.

Methods: Maternal sample was taken at time of hospital admission during labor (mothers received single-dose nevirapine); infant samples were collected at birth and at 6 and 12 weeks of age. We amplified the V1/V2 region of the env gene using plasma viral RNA as template for RT-PCR then examined diversity of the viral population using a heteroduplex tracking assay (HTA).

Results: Analysis was completed on the samples from 36 non-transmitting mothers along with 11 intrauterine (IU) and 21 intrapartum (IP) transmitting mother-infant pairs. Infants had significantly fewer variants than the transmitting mothers (3.3 vs 6.5, respectively, $p < 0.0001$), indicative of a bottleneck during transmission. The IU infected infants had fewer variants than the IP infected infants (2.21 vs 3.95, $p < 0.002$); the most common number of variants in IU infected infants was 1, while infants infected IP most commonly had 3 to 4 variants and none with only 1 variant. Finally, infants infected IU had variants that were readily detected in the mother, while infants infected IP often harbored variants not detected in the mother's blood. Non-transmitting mothers had fewer variants than transmitting mothers (3.3 vs 6.4, $p < 0.0001$). There was no correlation in transmitting mothers between timing and maternal CD4 count or HIV RNA load.

Conclusion: IU and IP appear to represent distinct mechanisms of transmission. IU transmission represents a greater bottleneck but involves transmission of the predominantly circulating virus. IP transmission represents less of a bottleneck but often involves the transmission of rare variants that are either compartmentalized in the mother or highly selected.

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Detecting Microtransfusions and HIV-specific Immune Responses in Uninfected Infants Born to HIV-infected Women

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Background: HIV-specific cellular immune responses are detectable in a proportion of uninfected infants born to HIV-infected women, indicating virus exposure and replication may have occurred in these infants. Exposure to the virus may have been facilitated by maternal-foetal microtransfusion (MFM), defined as small quantities of blood passing from mother to infant before or during childbirth.

Methods: 46 uninfected infants born to HIV-infected women were included in this study. 14 infants born to HIV-uninfected women and 10 HIV-infected infants formed the negative and positive control cohorts respectively. HIV-specific immune responses were detected using the chromium⁵¹-release assay and the IFN- γ ELISPOT assay. Infants were grouped according to the level of intervention utilized by the mother: no interventions or antiretroviral therapy (ART) only (group A; n=15), ART in conjunction with cesarean delivery before labour (eICS, group B; n=10), HAART only (group C; n=9), and HAART in conjunction with eICS (group D; n=12).

To determine if microtransfusion is occurring in this cohort, we developed a FACS-based approach using antibodies directed against the non-inherited maternal HLAs, to detect intact maternal cells in the infant circulation. We have also developed quantitative PCRs to detect MFM using HLA- specific primers and probes.

Results: 10 of the 46 uninfected infants born to HIV-infected women had detectable HIV-specific T cell responses. Of these 10 infants, 7 were in group A, 2 in group B, and 1 in group C, but none in group D. The absence of detectable HIV-specific T cell responses in group D was statistically significant compared with group A ($p=0.007$).

Conclusions: Uninfected infants born by eICS to HIV-infected women receiving HAART do not have detectable HIV-specific immune responses, suggesting that exposure to the virus does not occur in these infants. The presence or absence of MFM will be compared between the uninfected infants with and without HIV-specific immune responses.

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Integrating Prevention of Mother-to-child Transmission (PMTCT) and Antiretroviral Therapy (ART) Services for HIV-affected Families in Lusaka, Zambia.

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Background: In Lusaka, Zambia, PMTCT services were integrated into antenatal care (ANC) in the public sector in 2001. Many PMTCT facilities have begun to offer free access to antiretroviral therapy (ART), although pregnant HIV-infected women must be referred to a different part of the clinic for ART eligibility screening and receipt of services in all but one facility. Since women who qualify for ART are more likely to transmit HIV to their infants, it is critical that these women can access it.

Methods: We piloted screening antenatal women for ART in a separate 'feeder clinic.' The success of this approach (measured by the proportion of identified, HIV-infected gravidas enrolling into long-term HIV care) was compared to the standard practice of passive referral to the ART clinic. We also compared the CD4+ lymphocyte count and WHO stage of pregnant, HIV-infected women to non-pregnant women entering the general ART program to determine differences in immune status between the two.

Results: Between April 2005 and September 2005, 3946 HIV-infected pregnant women were identified through PMTCT programs at 11 Lusaka district clinics that offer ART. Of these, 446 (11%) were enrolled into long-term HIV care, of which 69 (15%) started ART. At the 10 clinics where HIV-infected gravidas were simply given referral slips for the ART clinic, only 221 of 3391 (7%) were enrolled into HIV care. At the one pilot clinic where ART eligibility screening for pregnant women was done in a separate feeder clinic, 225 of 555 (41%) identified were enrolled into long-term HIV care. Of all the pregnant women enrolled into care, the median CD4 count at enrollment was 331 cells/mm³ compared to 234 cells/mm³ for non-pregnant women ($p<0.0001$). Pregnant women were generally healthier with 85% of pregnant women either WHO Stage I or II compared to 46% of non-pregnant women ($p<0.0001$).

Conclusions: Offering screening for ART eligibility outside of a congested ART area resulted in more pregnant women undergoing evaluation for and initiation of ART. Preparations are underway to offer all HIV- infected pregnant women in Lusaka automatic CD4+ testing and WHO stage evaluation in ANC in an attempt to increase the number of pregnant eligible women accessing ART.

Plenary Session 3-D

Perterm Delivery & Pregnancy Outcomes

Friday, March 17, 2006, 1:00 pm - 2:00 pm

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Effect of The Pattern of Colonization of The Maternal Genital Tract at The Time of Delivery on Early Onset Neonatal Sepsis

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Background: Early onset neonatal sepsis increases significantly in the presence of vaginal and cervical colonization with pathogenic organisms. The aim of this study was to study the effect of the pattern of colonization of the maternal genital tract at the time of delivery on early onset neonatal sepsis in the Obstetrics and Gynecology Department, Kasr El-Aini Hospital, Cairo University.

Methods: We conducted a prospective clinical study on three hundred fifty two pregnant women coming for delivery and their newborns. Vaginal swabs were taken from the mothers before first vaginal examination and just before delivery. Surface swabs from the body of babies were taken. The neonates were clinically evaluated and prospectively followed up in the first week of their life for clinical evidence of sepsis and blood cultures were done for clinically septic neonates. Swabs were taken from different environmental sources in the Obstetric Department. Microbiological typing was conducted by biotyping and antibiogram to prove the similarity between microorganisms isolated from maternal or environmental sources and the corresponding neonates.

Results: Microbiological similarity was proven in 86% of cases. The correlation between clinical sepsis and microbiological agreement was statistically highly significant (P value=0.001). The predominant organisms isolated from the cervix and the vagina of the mothers were Coagulase negative Staphylococci (CoNS) (51.04%, 37.97% respectively). Also, the predominant organisms isolated from blood cultures were CoNS (35%). Positive vaginal and cervical swabs cultures were highly predictive of positive blood culture (P-value = 0.09). We found that, multiple vaginal examinations (more than 3 times) were the most frequent maternal risk factor in neonatal bacteremia (P-value=0.049). Contamination of materials (gel and gloves) and equipment (suction set) used for mothers and their babies during delivery was an important source of microorganisms especially CoNS.

Conclusions: maternal colonization and the contaminated environmental sources were important risk factors for neonatal sepsis. So strict infection control measures should be followed in delivery room.

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Missed Opportunities for the Prevention of Congenital Syphilis, Maricopa County, Arizona, 2000-2003

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Background: Arizona has the highest congenital syphilis (CS) rate in the country. Identification of barriers to prenatal care and missed opportunities for syphilis screening and treatment can inform future prevention efforts.

Methods: In June-August 2004, we interviewed women that gave birth to infants reported with congenital syphilis in Maricopa County, Arizona between 2000 and 2003, that could be located, and that consented to be interviewed.

Results: During 2000-2003, 95 cases of congenital syphilis were reported to the Maricopa County Department of Health. 12% were White, 71% were Hispanic, 13% were African-American, and 5% were Native American. 79% were live births, 21% were stillbirths. 29 women were located; 25 were interviewed and 5 refused. For the years 2000, 2001, 2002, and 2003, 3, 7, 3, and 11 cases were interviewed respectively. The median age of interviewed mothers was 22. The median years of education was 9; and the median months at current residence was 24. Knowledge of syphilis was limited. Only 4 (17%) women reported knowledge of the potential for syphilis to cause harm or death to infants. 6 (25%) knew that syphilis could cause rashes, sores and or "spots" on the skin or genitalia. 10 of 24 (42%) stated they did not know anything about syphilis. 18 (75%) women reported receiving some prenatal care. 12 (67%) reported attending more than 10 prenatal visits. Of the women reporting prenatal care, 10 (44%) reported attending a private hospital or clinic, four (22%) attended a public clinic and two (11%) attended a midwife clinic for prenatal care. 61% of women that reported having received prenatal care were referred by a medical provider. 9 (38%) reported having health insurance for themselves, 6 (25%) reported having health insurance only for the baby and 9 (38%) reported having no health insurance. 78% of women with health insurance reported coverage through Arizona Healthcare Cost Containment System (AHCCCS), the state version of Medicaid.

Conclusions: Many of these women reported being seen by medical providers. Provider education may prevent some cases of congenital syphilis by reinforcing current screening and treatment recommendations.

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Obstetric and Post-surgical Gynecologic Infections; Current Practices Regarding Group A Streptococcus, 2004

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Background: Group A streptococcus (GAS) or Streptococcus pyogenes, can cause severe invasive disease. In the United States, approximately 11,000 invasive GAS cases and 1,700 deaths occur annually. GAS infections are a serious and preventable cause of postpartum and post-surgical nosocomial disease, often linked to healthcare worker GAS carriage. In 2002, CDC published guidelines regarding prevention of postpartum and post-surgical GAS infections.

Methods: We mailed an anonymous questionnaire to 1,300 members of the American College of Obstetricians and Gynecologists to assess practices regarding postpartum and post-surgical infections. Questions included the frequency and etiology of infections, action taken, and adherence to and potential barriers to using CDC's published GAS guidelines.

Results: Of 689 respondents, 567 (82.3%) clinicians performed a total of 83,342 deliveries in 2004. Postpartum infections occurred in 2,440 (2.9%) patients. Most (52.9%) clinicians reported using antibiotics empirically and did not collect microbiologic specimens. Providers who collected specimens determined the microbial etiology in only 27.6% of cases; 85 (12.6%) were due to GAS. Post-surgical infections occurred among 2,953 (7.7%) of 38,510 surgical cases. A microbiologic diagnosis was confirmed in 19.9% of cases; 88 (15.0%) were attributed to GAS. Over 93% of clinicians reported that they were not familiar with CDC's guidelines regarding prevention of GAS disease; the biggest barrier to learning about the guidelines was lack of awareness that they existed.

Conclusions: Postpartum and post-surgical infections are common; microbiologic testing in these patients should be encouraged to identify GAS cases. GAS infection can be fatal and failing to institute appropriate control measures represents a missed opportunity for prevention. Guidelines to prevent GAS infection need to be disseminated in a readily accessible format to obstetric and gynecologic care providers.

Poster Session 3

HPV - Preventing Mother to Child Transmission of HIV

International Ballroom 6

Friday, March 17, 2006, 4:00 pm - 5:30 pm

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Human Papillomavirus Types and HPV-16 Variants in Cervical Intraepithelial Neoplasia and Cervical Cancer of Italian Women.

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Background: HPV types as well as HPV-16 classes (E, AA, As, Af1, Af2) and their variants have different geographic distribution and different degrees of association with cervical lesions. This study was designed to examine HPVs and in particular HPV-16 classes/variants among Italian women and their prevalence in case patients (affected by CIN 1-3 or ICC), versus control subjects with normal cervical epithelium (controls).

Methods: A total of 160 HPV-16 positive cervical samples from women of Italian Caucasian descent have been tested, including 36 ICC, 22 with CIN 2-3, 22 with CIN 1 and 80 controls. HPV-16 was detected with an E6/E7 gene-specific polymerase chain reaction, and variant HPV-16 classes and subclasses were identified by direct nucleotide sequencing of the region coding for the E6 and the E7 oncoproteins, the MY09/11-amplified highly conserved L1 region, and the long control region (LCR).

Results: Among the 160 HPV-16 samples, nine viral variants have been identified belonging to the European (Ep-T350 and E-G350) and non-European (AA and Af-1) branches. The E-G350 is the prevalent variant in all analyzed different disease stages being present in 57.5% of ICC, 51.2% of CIN 2-3, 49.1% of CIN 1, and 51.6% of control samples. The non-E variants AA and Af1, rarely detected in control samples, represent 35.5% of all HPV-16 infections in ICC (with a peak of 19.9% and 13.2%, respectively), showing a statistically significant increase in frequency in more advanced lesions (χ^2 trend = 7.4; $P < 0.05$). The prevalence of HPV-16 Ep-T350, however, is higher in controls (44.3%) and in of CIN1 (40.2%) than in CIN 2-3 (29.2%) and in ICC (12.4%) cases strongly suggesting lack of progression for pre-neoplastic lesions associated with such variant.

Conclusions: The increased frequency of non-E variants in invasive lesions suggests that they are more oncogenic than E variants. This could have implications for future diagnostic and immunotherapeutic strategies.

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Comparison of an Arrays System versus Hybridization Reverse in the Human Papillomavirus Genotyping

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Background: Hybrid capture is a conventional method for Human Papillomavirus (HPV) testing and cover a broad spectrum of genotypes, including high- and low-risk genotypes, but keep out other genotypes that can be implicated in cellular transformation. In this work we have compared an experimented method (hybridization reverse) with an arrays method for the identification of HPV genotypes.

Methods: We have studied 109 patients with well documented HPV infection. All patients were positive in the hybrid capture assay. This method (HCII, Digene) is characterized by hybridization with high-risk HPV probe (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, and 68) and low-risk HPV probe (6, 11, 42, 43, and 44). DNA extracted were amplified and hybridized with probes fixed to nitrocellulose membrane including all types of HCII and other low-risk types (40 and 70) and intermediate-risk (53 and 66) (Innolipa HPV, Innogenetics). Likewise, DNA was amplified with biotinylated MY09/MY11 primers (HPV L1 ORF) and hybridized in probes fixed in low density microarrays including all types of Innolipa and other high-risk types (73 and 82), intermediate-risk type (26), low-risk types (61, 72, and 81) and indeterminate-risk types (54, 62, 71, 83, 84, 85, and 89) (Clinical arrays HPV, Genomica).

Results: Using hybridization reverse method were detected simple infection in 64 patients and mixed infection in 42 patients (3 negatives) while with array method simple infection were found in 55 patients and mixed in 53 patients (1 negative). The more prevalent genotypes with hybridization reverse were 16 (33 patients), 6 (21), 11 (16), 52 (13), 51 (12), 31 (10), 18 (9), and 56 (9). However the genotypes identified by array method were 16 (38), 6 (28), 11 (17), 58 (17), 33 (16), 31 (14), 18 (9), and 66 (9). The genotyping agreement they were high in simple infections between both methods (94.7%) but very low in mixed infections (45.7%). Any types were detected only by array (61, 72, 81 and 82) or hybridization (74).

Conclusions: In the simple infections both methods have showed an excellent agreement. However in the mixed infections the results are not very consistent and is necessary more studies for to explain possible cross-reactions or mistakes.

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Prevalence and Determinants of Human Papillomavirus Cervical Infection in a Sample of Honduran Asymptomatic Women

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Background: Cancer of the cervix has the highest mortality rates due to cancer among Honduran women. Human papillomavirus (HPV) is the most prevalent sexually transmitted infection in the world and a necessary cause for the development of invasive cervical cancer. Although HPV infection is widespread, few people even know they are infected because they seldom have noticeable symptoms. The study was aimed at estimating type-specific HPV prevalence and its determinants among a sample of 200 women with normal cytology attending gynecological outpatient clinics in Tegucigalpa.

Methods: Epidemiological information was available through personal interview and the study of cervical exfoliated cell. HPV DNA was detected amplifying a short fragment from the L1 open reading frame followed by a reverse line probe hybridization assay (LiPA) for genotyping.

Results: The overall HPV prevalence was 46%, with the highest peak of infection found in women under 35 years (37%). Twenty-three types of HPV were detected; HPV 16, HPV 51, HPV 31, HPV 11 and HPV 18 were the most common. Women aged less than 30 years had and increased risk of having multiple infections (up to six types). Although not statistically significant, there was a positive association between increased HPV prevalence and number of sexual partners. Among women who had been exposed to wood smoke while cooking an increase HPV DNA detection was observed.

Conclusions: The prevalence of genital HPV infections in the studied population is very high when compared to the ones reported internationally. The large variability in the frequency of HPV infections will need to be considered when estimating the effect of a vaccine against the virus.

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Revealing Women's Concerns about Herpes and HPV: Lessons Learned from Two National Hotlines

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Background: Genital herpes and human papillomavirus (HPV) are two of the most common sexually transmitted infections in the United States. The National HPV & Cervical Cancer Prevention Hotline and National Herpes Hotline, programs of the American Social Health Association (ASHA), provide up-to-date information, emotional support, various materials and appropriate referrals specific to herpes and HPV to individuals across the United States and abroad. The experience of these services in addressing women's concerns may be instructive to professionals, educators, and policy makers. The authors' objective is to profile female callers of the National Herpes Hotline (NHH) and National HPV & Cervical Cancer Prevention Hotline (NHPVH), and identify common questions and topics of concern from this population.

Methods: NHH surveyed 10,368 people between January 2000 and January 2005. NHPVH surveyed 3,349 individuals between January 2000 and January 2004. Data were quantitatively analyzed.

Results: Sixty-two percent (n = 8,505) of individuals were female. Of these, the majority had above-average income and a college degree. Nearly half had heard about the services through their own searches of the Internet. The concerns most often expressed included: being newly diagnosed with either virus, contracting the virus from a partner, test-related issues, pregnancy, communication with their health care provider(s), current or future symptoms, complications (cervical cancer for HPV), treatment, transmitting the virus to a partner and psychosocial issues such as partner communication and self esteem.

Conclusions: Findings indicate that even higher educated women with above-average incomes have numerous questions, concerns, and needs on multiple issues surrounding genital herpes and HPV. Strategies for increasing women's access to accurate information is warranted and programs offering such information should be implemented. Any program, facility or health care professional assisting women, especially those in underserved populations, should consider the importance of offering appropriate information and referrals related to herpes, HPV and other sexually transmitted infections.

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Evaluation of a Multiplex Molecular Differential Diagnostic System for Type-specific HPV Diagnosis among HIV-1 Seropositive and Pregnant Women

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Background: Human papillomavirus (HPV) is associated with a variety of clinical conditions among female patients, which range from innocuous lesions to cancer. HPV has been implicated in 99.7% of cervical squamous cell cancer cases worldwide as well as adenocarcinomas of the cervix. The aim of the present study was to evaluate a new HPV typing method in samples collected from HIV-1 positive and pregnant women.

Methods: Thirty-three endocervical samples collected from woman who were followed up during prenatal care at a specialized unit for HIV-1 seropositive and pregnant women at the Federal University of São Paulo were evaluated. The HPV DNA was PCR amplified using universal primers MY9/MY11 and the HPV typing determined by RFLP. The same HPV DNA samples were also submitted to the multiplex Molecular Differential Diagnostic (MD²) system, which amplifies and detects type specific E6 and E7 genes for HPV typing. This test was performed according to the manufacture instructions and the results further evaluated.

Results: Among the samples tested by the multiplex MD² methodology, 69.7% (23/33) of the results obtained were in agreement with the RFLP method, widely used in Brazil as an HPV typing tool. In 30.3% (10/33) of the samples, a disagreement was found between the two methods; however, the multiplex MD² method could identify multiple HPV types in the same sample that could not be detected with the RFLP.

Conclusions: It is well known that high rates of HPV co-infection are found in this studied population and, the multiplex MD² methodology seems to be a very sensitive and high throughput tool for HPV typing among HIV seropositive and pregnant women.

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Prevention of HIV Transmission in Women: A Novel Research Database to Assist in Microbicide Development

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Background: In South Africa, one in every four women is HIV-positive by the age of 22 years. An effective microbicide could prevent 2.5 million cases of HIV infection over 3 years. To make possible the analysis of pre-formulation and formulated microbicide research data, we introduce a novel database to capture relevant pre-clinical and clinical microbicide trial data. Through analytical reporting, our goal is to guide researchers and funding agencies to efficiently prioritize the candidate microbicide pipeline, thus speeding microbicidal distribution to women worldwide.

Methods: The Microbicide Research and Development Portfolio (MRDP) was created using Microsoft.net framework 1.1, Visual Studio, and SAS on an SQL server platform. Web-based interactive data entry screens are assessable through <http://www.microbicideportfolio.org/>. Mechanisms of action, compound formulations, physical properties, and contraceptive activity are captured. We used published in vitro data for leading microbicide candidates (UC-781, BufferGel, C31G, and PRO2000) to exhibit analytical reporting capabilities.

Results: Comparison of pre-clinical activity and toxicity data for UC-781, BufferGel, C31G, and PRO2000 with those of the failed microbicide compound, N-9, are demonstrated. Electronic or manual data collection in standardized formats allows inter- and intra-laboratory assay evaluation of developing compounds at critical in vitro testing phases.

Conclusions: In the face of the global AIDS crisis, microbicides have enormous potential to help slow the pandemic when women can initiate and exercise HIV prevention. This database serves as a tool for rational decision-making in the selection of the best microbicides to move forward in development. With critical research data housed centrally and topical vaginal microbicides on the marketplace, a significant decline in HIV transmission may be realized.

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Merck/ CDC Pregnancy Registry for Varicella Vaccine: 10 Year Data

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Background: VARIVAX[®] is a live attenuated viral vaccine with approximately 56 million doses distributed since 1995. VARIVAX is contraindicated during pregnancy and within 1 month (ACIP) or 3 months (package insert) prior to becoming pregnant because the effects of the vaccine on fetal development are not known. The Pregnancy Registry for VARIVAX, a collaborative effort between Merck & Co., Inc. and the Centers for Disease Control and Prevention, was established to monitor for Congenital Varicella syndrome or other birth defects in offspring.

Methods: The registry receives voluntary reports from health care providers or consumers about women given the vaccine three months prior to or during pregnancy. Intensive follow-up with the health care providers, with questionnaires and telephone calls, is conducted to obtain pregnancy outcome data. The classification of pregnancy outcomes includes: liveborn infant, elective termination, spontaneous abortion, and late fetal death. All reports are evaluated for the presence of congenital anomalies and medical records are requested for all infants where consent has been obtained, for up to two years after birth. Outcomes from prospectively reported pregnancy exposures are used to calculate rates and 95% confidence intervals using the Haenszel method.

Results: From March 17, 1995 through March 16, 2005, 1432 reports were received and 981 (69%) women were enrolled. Pregnancy outcomes were available on 629 prospectively enrolled women. Among the 531 livebirths, 11 babies had congenital anomalies (rate 2.1%, 95% CI 1.0, 3.7) and there was no evidence of congenital varicella syndrome (rate 0, 95% CI 0, 1.6). The congenital anomalies showed no specific pattern or target organ. The registry's congenital anomaly rate did not exceed the background population rate (3.4%).

Conclusions: Although the numbers of exposures are not sufficient to rule out a very low risk, data collected in the Pregnancy Registry to date do not support a relationship between the occurrence of congenital varicella syndrome or other birth defects and varicella vaccine exposure during pregnancy. VARIVAX remains contraindicated in pregnancy.

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Chlamydia: African American Women at Risk

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Background: Chlamydia is the most reported bacterial sexually transmitted disease in the United States. In 2003, 877,478 Chlamydia infections were reported to the CDC, up from 834,555 cases reported in 2002. It is estimated that there are 2.8 million new cases of Chlamydia each year due to under reporting.¹ Because of its widespread prevalence; Chlamydia remains a threat to women's health. African-American women are at an increase risk due to the disparities seen among white, Hispanic, and Asian counterparts. While health education and screenings remain primary means of prevention, the number of reported Chlamydia cases continues to increase in the African-American community.

Methods: A total of 279 clinical specimens submitted during July 2005 for Chlamydia testing were selected for this study. Samples were submitted to the laboratory of Riverside Regional Medical Center, located in Newport News, Virginia. Testing was performed using the Cobas Amplicor™ CT/NG Test. The test is an invitro multiplex diagnostic test that can detect either or both *Chlamydia trachomatis* or *Neisseria gonorrhoeae* from endocervical and urethral swabs and urine samples. This test utilizes polymerase chain reaction (PCR) nucleic acid amplification and nucleic acid hybridization. The assay was performed according to the instructions of the manufacturer.

Results: Of the 279 clinical specimens tested, 33 were positive for Chlamydia. Of the positive specimens, 29 were female, 4 were male, 27 were African American, and 6 white. Of the 29 positive female samples, 26 were African American and 3 white. Positive rates based on age were as follow: female age 13-24 (68%), age 25-34 (28 %) and age 35-44 (4 %).

Conclusions: In this study, approximately 12% of patient samples tested positive for Chlamydia. Chlamydia continues to afflict the African American females at a higher incidence when compared to other races. Of the 33 positive specimens, 82% were African American. Of that, 90% were African American females. Chlamydia trachomatis continues to afflict African American females age 13-24 at a rate 4 times that of white females. This disparity places African American females at risk for PID, infertility, and fatal ectopic pregnancies.

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Women, Work and Water: Solar Water Treatment as a Sustainable Household-level Approach in Rural India

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Background: Waterborne disease is a significant problem in rural India, with around three-quarters of the population having no access to a supply of treated water. In this context, solar disinfection offers the potential to provide a low-cost method of water treatment that is especially beneficial to women and children, who bear the burden of water collection/treatment.

Methods: A custom-designed small-scale solar disinfection container with a reflective rear surface was distributed via women's self-help groups in three regions of India (Rajasthan, Uttar Pradesh and Kerala) and the number of cases of diarrhoea/gastro-enteritis was followed over a one-year period. An evaluation questionnaire was used to obtain feedback from the women as to the perceived benefits of solar disinfection.

Results: The results in each area clearly showed a reduction in cases of diarrhoea/gastro-enteritis of up to two-thirds over the study period. Women were enthusiastic adopters of this approach, and commented that there was an enhanced sense of well-being as a result of consuming solar-treated water. This enabled them to work more effectively, either at home, or in employment.

Conclusions: solar disinfection was shown to be sustainable over the trial period, with strong positive feedback from the participants.

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Transmission Dynamics of Malaria Vectors in Igbo-Ora, Southwest Nigeria.

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Background: A survey of 15 mosquito collections was carried out in Igbo-Ora Southwest of Nigeria between 2001- 2002 to appraise the ecology of vectors that sustain malaria transmission in this area. The site was surveyed for macro/micro breeding pools, physical and anthropological traits favorable for breeding of vectors and, factors that enhance vectors survival. Igbo-Ora is the study site for many infectious diseases projects at the University of Ibadan Medical School for four decades, yet there are no entomological data for the area.

Methods: Mosquitoes were collected by mouth aspiration from 6 am to 8 am daily primarily to meet the residents indoor and survey their dwellings for

potential mosquito breeding sites. Participatory observation, interview and molecular techniques were utilized for data collection.

Results: Of the 164 houses visited (85 in 2001 and 79 in 2002) 91 harbored *An. gambiae*. Over half of houses in 2001 and 2002 harbored *An. gambiae* 62% and 65% from July-September. The mean density was 11 mosquitoes per house; the monthly distribution was uneven: 29% of houses in June 2001 and 32.6% in September 2002 harbored *An. gambiae*.

Morphological identification indicated that 989 mosquitoes were *An. gambiae*. Samples were relatively low (10.46 and 10.5) but increased remarkably in the following months of collection (11.06 and 11.73) for both sessions; however, individual densities of 50 to 175 mosquitoes were recorded in some rooms. The human biting rate was 27.28% in 2001 and 48% in 2002 while 304 (85.4%) *An. gambiae* had fed on humans with an overall anthropophilic rate of 87.1% in Igbo-Ora during the study period. The mean daily aggressivity of *An. gambiae* was 1bite and 2bites per person per night in 2001 and 2002 respectively. Some 50 mosquitoes (14%) fed on other animal blood that could not be determined.

Conclusions: The mean density of *An. gambiae* remained at minimum in Igbo-Ora for the four months during two years indicating that it was a seasonal mean density. The variations of mosquito's density among quarters were significant and needed to be followed up for effective control. The animal blood sources must be specified to reduce malaria among pregnant women and their children.

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Epidemiological Analysis of Crimean-Congo Haemorrhagic Fever (CCHF) Disease in Iranian Women

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Background: CCHF is a lethal dangerous zoonotic disease with a high mortality rate. This disease is caused by an Arbovirus from Bunyaviridae family and Nairovirus genus, which is transmitted from infected tick bites, contact with contaminated blood and exudations of infected animals or patients.

Methods: In the period from June 2000 to October 2005 serum samples from 772 suspected patients for CCHF have been sent to the Arboviruses Lab (National Center) of the Pasteur Institute of Iran and have been analyzed serologically by ELISA method for detecting specific IgM and IgG against CCHF and with RT-PCR molecular method for the presence of virus genome.

Results: Between 772 suspected human cases, 296 cases were positive serologically and molecularly. Between 296 cases, 62 cases were female. Among these female, 55 were IgM positive, 7 cases were only RT-PCR positive and 16 cases died. Between 62 female, 52 were housewife, 6 students, 2 farmer and 2 had other jobs. 67.7% of the 62 positive cases were from Sistan-Baluchestan and Esfahan province.

32.2% of 62 positive cases were in the range of 0-20 years old. 43.6% were between 21-40 years old, 22.6% were between 41-60 years old and 1.6% were between 61-80 years. 43.6% of 62 positive cases had contact with animal and 4.8% of them had the history of tick bite.

Conclusions: CCHF is the most important haemorrhagic Fever affecting the Iranian patients. Women infection to CCHF can be related to their life condition. Contact with infected livestock or handling infected tissues is a way of transmission of the disease. Considering the fact that women in rural areas are also involved in farming activities, so they are in contact with infected livestock and also with ticks and can be consequently infected with the disease. As the most infected women are in the age range 21-40, so informing the high-risk group of the transmission route of the disease and how to contact with the livestock and their organs can be significant in decreasing the rate of this disease.

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High Prevalence of Antibodies to SFG Rickettsiosis and Arboviruses among Female Febrile Patients in Sub-Urban Areas in Cameroon

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Background: Cameroon is situated between 2° and 14° north of the equator; it has a vast tropical rain forest between 2° and 5° north of the equator, which provides a good habitat for a variety of hematophagous arthropods. Many uneducated women in sub-urban and rural communities depend on small scale farming which pre-exposes them to many potential arthropod vectors, which could transmit bacterial and viral agents responsible for undifferentiated acute febrile illnesses. Febrile illnesses such as African tick bite fever, chikungunya fever, dengue fever and non-icteric yellow fever can be difficult to recognize, especially during the early stages of the disease and in a malaria endemic zone. This study was aimed at determining the prevalence of these fevers in rural women in Cameroon.

Methods: Serum samples from 142 female acutely febrile patients at clinics in Tiko and Buea, Cameroon were examined by immunofluorescence assay, western blot assay, and hemagglutination tests for antibodies against *Rickettsia africana* and African alphaviruses and flaviviruses. These sera did not contain antibodies against *Salmonella typhi*, and blood malarial parasites were not detected.

Results: Sera of 35.9% contained IgM antibodies reactive with *R. africana* by immunofluorescence assay and were reactive with outer membrane proteins A and B of *R. africana* by immunoblotting, establishing a diagnosis of acute rickettsiosis, most likely African tick-bite fever. Hemagglutination inhibition testing of the sera also detected antibodies to chikungunya virus (47%) and flaviviruses (47%).

Conclusions: The high prevalence of antibodies to arboviruses may represent a major, previously unrecognized public health problem in women pre-exposed to potential bacterial and viral agents and in an area where endemic malaria and typhoid fever have been the principal diagnostic considerations.

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Gender Disparity in Science and Technology at the Tertiary Level in Eastern Nigeria

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Background: Gender has often been misunderstood as being about the promotion of women only. However, gender focuses on the relationship between men and women, their roles, access to and control over resources, division of labour and needs.

The major objectives of this paper is to identify gender issues which constitute inhibitors or "clogs in the wheels" of girls and women under-taking those professions often purported "male domain" that is Science and Technology and then develop strategies for addressing the problems.

Methods: Survey was designed to find out the factors responsible for gender issues which constitute inhibitors to Science and Technology enrolment.

Results: Statistics show that there is poor enrolment of women in the field of Science and Technology. Findings from this study indicates that the choice of career in Science and Technology among female students is mainly influenced by societal belief about sex-role, nature of Science and Technology, lack of female role models, lack of guidance and information on Science and Technology.

Conclusions: Girls and women need to be determined. They should not see any discipline as "male domain" or "female domain" provided it is a discipline that they can go into successfully. Females in Science and Technology should embark on public enlightenment campaigns. These can be through seminars, lectures, radio and television programmes. Women in this profession need to create participatory structures for women to multiply their jobs as policy makers, mentors and role models for future generations of women.

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Prevalence of Methicillin-Resistant *Staphylococcus aureus* with Reduced Susceptibility to Vancomycin among Healthy Women in Two Nigerian Metropolitan Cities.

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Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) infections, which had been uniformly susceptible to vancomycin, are increasingly reported to develop resistance to the same antibiotic worldwide and infections caused by *S. aureus* with reduced susceptibility to vancomycin are a new clinical and public health dilemma. This study investigated its prevalence in urine of healthy women in two cities of Nigeria and its resistance pattern to other antibiotics.

Methods: "First catch" urine samples collected from healthy women volunteers in Abuja and Zaria cities of Nigeria were cultured and screened for *S. aureus* using standard microbiological procedures. The isolates were then subjected to antibiotic susceptibility testing using disc diffusion technique.

Results: A total of 114 *S. aureus* isolates and 57 coagulase-negative staphylococci (CoNS) were isolated from 300 samples of urine screened. Isolates from Abuja were made up of 60 (63.2%) *S. aureus* and 35 (36.8%) CoNS, while those from Zaria women were made up of 54 (71.7%) *S. aureus* and 22 (28.9%) CoNS. Of the *S. aureus* isolated, 46 (76.7%) and 37 (68.5%) were methicillin-resistant in Abuja and Zaria respectively while 37 (80.4%) and 33 (89.2%) of the methicillin-resistant isolates in Abuja and Zaria respectively had reduced susceptibility to vancomycin. These strains had very low resistance to ofloxacin, ciprofloxacin, sparflaxacin and gentamicin but high resistance to cephalixin, ampicillin and clindamycin.

Conclusions: The high prevalence of *S. aureus* with resistance to both methicillin and vancomycin in the urine of healthy women in these cities emphasizes the importance of the prudent use of antibiotics and the use of infection-control precautions to prevent their transmission.

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Mother-to-offspring Retroviral Transmission via Breast Milk

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Background: Breast milk is a major factor for transmission of HIV from mother to child, especially in the developing world. In many countries, baby formulas with adequate daily nutritional requirements are not available and clean water supply is also a problem. Therefore, mothers do not have any alternative means of feeding their babies. Although it is known that HIV is transmitted through breast milk, it is not known how the virus is replicated and released in the breast milk. We have developed a mouse model to study in breast milk transmission of a retrovirus called Moloney Murine Leukemia Virus, temperature sensitive (MoMuLV ts1). Currently, we are investigating the effects of this viral transmission on the pups.

Methods: Mice were injected with 0.4×10^6 FFU/ml of MoMuLV ts1 virus at 72 hours post delivery and the control group was injected with the media only. All mice were allowed to reach adulthood and produce pups. The pups of infected mothers were allowed to suckle from uninfected surrogate mother, while the control pups of uninfected mothers were allowed to suckle from the infected surrogate mothers.

Results: A total of 36 out of 46 pups (78.3%) of infected mothers nursed by the uninfected mothers had MoMuLV ts1 infection, while 38 out of 38 pups (100%) of uninfected mothers showed viral infection when they suckled from the infected mothers. This clearly shows that the infection is passed through the breast milk in a highly efficient manner. 6 pups from the uninfected mothers nursed by the infected mothers developed clinical symptoms and lymphoma.

Conclusions: This model can be effectively used to study the mechanism of viral transmission including the specific host cells, viral replication and release of the virus in the breast milk.

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Female Genital Cutting and HIV in Kenya

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Background: Female genital cutting is a common experience of girlhood in Sub-Saharan Africa, yet scholars have only speculated about the role of this practice in the transmission of HIV/AIDS. Given the higher rates of HIV in African women than men, this analysis tests whether female genital cutting is associated directly or indirectly, through sexual practices and genital infections, with the odds of being HIV-positive among 3,027 women aged 15-49 years in Kenya.

Methods: Multivariate logistic regression and methods to account for selection on HIV testing are used.

Results: Female genital cutting has an unadjusted *protective* effect in the observed sample of women. This effect is likely accounted for by the marital and sexual practices of circumcised women, as well as the underlying socio-demographic determinants of female genital cutting and HIV.

Conclusions: Research on HIV/AIDS in Africa should consider the roles of female genital practices in the transmission of HIV to women.

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Paucity of Protective Flora in Indian Breastfed Neonates

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Background: In the neonatal period, establishment of normal commensal microflora plays an important role in the development of gastrointestinal mucosal defense. *Lactobacilli* and *bifidobacteria* are important members of the intestinal microflora, that have been associated with beneficial effects on the host, such as maturation and integrity of gastro-intestinal tract, antagonism against pathogens and immune modulation.

Methods: Stool samples were collected from 30-60 day-old infants and processed qualitatively within two hours of collection for aerobic and anaerobic organisms. Aerobic Gram-negative and Gram-positive organisms were identified by API (bioMeureux Vitek Inc.) Anaerobic organisms were identified by RapID ANAII system (Innovative Inc. USA.)

Results: Of the total 29 exclusively breastfed fullterm babies, commonly isolated aerobic organisms were *Klebsiella pneumoniae* 12/29 (41.3%), *Enterococcus faecium* 10/29 (34.4%) and *E. coli* 7/29 (24.1%). Other aerobic organisms such as *Proteus spp.* 3/29 (10.3%), *coagulase-negative staphylococci* 2/29 (6.8%) and *Micrococcus spp* 1/29 (3.4%) were also isolated. Colonization by anaerobic organisms was limited to five babies during the age 31-42 days and isolates included *Bifidobacterium spp.* 4/29 (13.7%), *Clostridium. bifementans* 1/29 (3.4%); none of the samples grew *Lactobacillus spp.*, *Bacteroides spp.* or other anaerobes.

Conclusions: In the light of our findings, it is important to speculate whether breastfed babies are colonized with normal flora in our country. Our observations in healthy infants are underscored by the fact that they were not on antibiotics, and were not cared for in a very clean environment. It would appear that circulating environmental microbial pressure in a developing country like India, immunoglobulins and bactericidal factors in the mother's milk may adversely affect the survival and successful colonization by these friendly bacterial strains.

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Serum Lactate Assessment in HIV-1 Infected Pregnant Women During the Third Trimester

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Background: nucleoside reverse-transcriptase inhibitors (NRTIs) have been associated with mitochondrial toxicity and hyperlactatemia. Particular nucleoside use (ddI, d4T), female gender, pregnancy and concomitants

conditions were identified as risk factors. The aim of the present study is to describe consecutive determinations of lactate serum levels at the beginning (lactate 1) and the end (lactate 2) of third trimester of pregnancy in a cohort of HIV+ women.

Methods: a prospective assessment over a 12-month period in 31 HIV+ pregnant women of: serous lactate concentrations after initiating antiretroviral treatment (ART); lactate 1 and lactate 2, CD4 count, HIV-RNA copies/ml, time exposure to NRTIs, concomitant morbidities, HCV and/or HBV infection, substance abuse and perinatal outcomes.

Results: lactate was above normal (2.1 mmol/l) at least once in 12/32 subjects (37%), all exposure to NRTIs. 9/12 had been receiving regimens with NRTIs before they become pregnant and had significant clinical findings: HIV-advanced disease (3), persisting vomiting (2), pre-eclampsia (1), peripheral neuropathy (1), and hepatitis-C (1). 2/12 cases had high level of lactate 1 and 2. 8/12 cases (66%) continue with (ART) after delivery in contrast with 4/20 patients (20%) with normal values. The mean of lactate 1 and lactate 2 were 1.43 and 1.91 mmol/l respectively. In 28/31 cases lactate 2 was higher than lactate 1.

Conclusions: trends to increasing level of lactate was observed in the third trimester of pregnancy in this cohort. The majority related to a clinical condition. Pregnancy-specific changes, particularly in the last trimester may increase risk of toxicity to antiretrovirals. Although the value of screening lactate is not established, a diagnostic role in patients with specific features should be evaluated.

Plenary Session 4-B

Barriers & Challenges to Infectious Diseases Prevention in Women

Friday, March 17, 2006, 4:00 pm - 5:30 pm

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Transmission of Bacterial Pathogens by Domestic Cockroaches - *Blat orientalis*

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Background: The outbreak of diarrhoea due to the same *Salmonella* Havana and spread of cockroaches in the Nursery Unit of Kenyatta National Hospital has been a major problem for the last three years, despite spraying cockroaches with insecticides and use of effective antibiotics for the control and management, the sporadic outbreak continued. The present investigation was undertaken to find the role of cockroaches in a hospital with sporadic nosocomial infection due to *Salmonella* Havana and find out how we can contain it.

Methods: 260 cockroaches were collected from the unit and 50 of them from high-class private homes with clean environment. Faecal pellets of cockroaches from cracks and crevices of cupboards were swabbed. 155 cockroaches were washed in 2% nutrient broth. Guts were removed from the other 105 and put in similar broth. All the extract were cultured in suitable media. Insecticide-pyrethrin was used to control cockroaches.

Results: From the gut only *Serretia* species were isolated. *Enteropathogenic Escherichia coli*, *Serretia*, *Salmonella*, *Klebsiella*, *E.coli* and *proteus* species were isolated from the bodies. Also *Salmonella*, *Serretia* & EPEC were isolated from faecal pellets. Despite spraying the cockroaches in the unit, the outbreak was not controlled. But disinfecting the environment where *enteropathogens* were isolated and spraying the cockroaches the sporadic outbreak due to *Salmonella* Havana, was controlled.

Conclusions: Our study has shown that cockroaches do not retain invading bacteria in the gut. The isolation of the same multiple resistant *S. Havana* from patients and hiding places of cockroaches show cockroaches transmitted

this strain from hiding places to the new patients and then back to the hiding places. This might have resulted in the sporadic outbreak of diarrhea due to the same *S. Havana* in the last three years. This study has shown that cockroaches can transmit pathogens mechanically hence possible role of cockroaches in the transmission of human pathogens should not be ignored or simply rejected.

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A Collaborative Approach to Providing STD/HIV/Hepatitis Services to Incarcerated Women

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Background: The Cook County Jail (CCJ) is the largest single-site jail in the nation. The daily census averages 10,000 _ 9,100 males and 900 females. In 2004, there were over 100,000 detainees booked at CCJ. Each week 300 females are processed through intake. Approximately 16% of those booked at CCJ in 2004 were women.

In 1999, the Cook County Sheriff realized the unique needs of incarcerated women and developed the Sheriff's Department of Women's Justice Services (DWJS), which conducts three unique programs.

Methods: During initial booking and intake into the jail, women are given overall STD screening services, which include chlamydia, gonorrhea and syphilis testing.

Currently STD/HIV/Hep and prenatal services are provided to soon-to-be mothers through a collaboration with Access Community Health Services. Once a month, education is provided to newly oriented participants of each program. A non-curriculum based STD/HIV/Hep educational session is conducted by Cermak Health Services or Access Community Health Services. After each educational session, CDPH's STD/HIV Program offers HIV counseling and testing via the OraSure or OraQuick technologies. OraSure and confirmatory specimens are analyzed by the state lab and results are followed-up by CDPH as necessary.

CDPH's Immunization Program offers Hep A/B vaccinations and Hepatitis C testing. All positive Hepatitis C participants receive immediate referrals for follow-up care.

All results, are given to the participants in a private and confidential setting.

Results: 1,887 have received STD/HIV/Hep education. 1,213 HIV tests (OraSure and OraQuick) with seven newly diagnosed positive results have been given. Hep vaccination and screenings services were introduced in 2004. 360 Hep C tests with nine positive results and 264 doses of Hep A/B given.

Conclusions: Correctional facilities are the ideal place to conduct educational and screening services. Even though many incarcerated women are at risk for communicable diseases, they may have never had the opportunity to receive information and services in relation STDs, HIV, or Hepatitis. Collaborations are essential in addressing this much needed task.

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Evaluating Cervical Cancer Screening Programs: Addressing the Needs of Women with Disabilities

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Background: Due to unique as well as common barriers, disparities in preventive health services, such as Pap testing, for women with disabilities exist. Data indicate the 26 million U.S. women with disabilities (2004) are disproportionately represented among minorities, the elderly and the poor. Although these women are at equal risk of HPV infection, they are less likely than women without disabilities to receive Pap tests at recommended screening intervals. Evaluation of CDC funded state Breast and Cervical Cancer Early Detection Programs (BCCEDPs) to determine program activities and needs for screening women with disabilities has not previously been conducted.

Methods: A pilot program evaluation using a written survey instrument was administered in 2004 to a sample of nine of 50 state BCCEDPs. These states were purposely selected based on 2 criteria; having previous disability-related activity and coexisting state CDC Disability and Health Program funding. Qualitative and quantitative data were compiled and analyzed using thematic categories and frequency counts.

Results: Information on BCCEDP activities, plans and needs indicated opportunities to integrate improved services for women with disabilities in the 9 BCCEDPs. Barriers to implementing these services were identified and included limited or lack of data on disabilities of women screened through the program, the eligible population of women with disabilities in their state, and training of BCCEDP healthcare providers to screening these women. State BCCEDPs lacked data on needs for additional program resources such as training and accessible examination tables to screen them.

Conclusions: Without a foundation of public health and program information, national and state programs such as CDC's BCCEDPs cannot characterize the needs of women with disabilities within their eligible populations and support improved program services. Engaging partners, including disability programs, in further evaluation, planning and implementation can serve to guide the national and state BCCEDPs and other screening program's decisions related to services for women with disabilities.

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Nutritional Biomarkers Associated with Gynecological Conditions Among U.S. Women with or at Risk of HIV Infection

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Background: Women infected with human immunodeficiency virus (HIV) face a combination of health threats that include compromised nutrition and adverse gynecological conditions. This relationship between HIV, nutrition, and gynecologic conditions is complex and has rarely been investigated. This analysis was conducted to investigate nutritional biomarkers associated with several gynecological conditions among U.S. women with or at risk of HIV infection.

Methods: Data on 369 HIV-infected and 184 HIV-uninfected women with both nutritional and gynecological outcomes were analyzed from a cross-sectional nutritional substudy of the HIV Epidemiology Research Study (HERS). We examined micronutrient distributions comparing HIV-infected to HIV-uninfected participants, and both subgroups to the US population. We then modeled the relationship of 16 micronutrients serum levels to various gynecologic conditions producing partially adjusted odds ratios (ORs), adjusted for study site, risk cohort, and HIV status.

Results: HIV-infected women's median antioxidant levels were lower than the US population medians. HERS women had lower median levels for vitamin A, selenium and zinc irrespective of HIV status. Trichomoniasis prevalence was inversely related to serum α -carotene. Lower levels of vitamins A, C and E and β -carotene were associated with an increased risk of bacterial vaginosis. Serum zinc was positively associated with risk for HPV. *Candida* colonization was higher among women with higher levels of total iron binding capacity.

Conclusions: We identified several significant associations of micronutrient levels with the prevalence of gynecological conditions were identified. This findings warrant further investigation into possible causal relationships.

Plenary Session 4-C

Interface of Sex, Gender, & Infectious Diseases

Friday, March 17, 2006, 4:00 pm - 5:30 pm

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Sex, Gender and Dengue

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Background: There has been a dramatic increase in cases of dengue fever, dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS) in recent years, and dengue has become an important public health problem in tropical and sub-tropical areas with an estimated incidence of 50 million cases annually, 500,000 DHF cases that require hospitalization, and case fatality rates averaging 2.5%.

Male/female differences as regards dengue may be important. There is evidence of greater severity and higher case fatality rates in females compared to males. Some studies point to different incidence rates among males and females, but the results are not consistent. There are also risks to mother and child when pregnant women become infected with dengue, especially if the infection occurs late in pregnancy. Furthermore, there is evidence of gender differences in the roles of males and females in household prevention (which involves the elimination of mosquito breeding places around the house) and there may also be differences in access to treatment in some places.

Yet, much information of male/female differences is lacking. One event likely to improve the knowledge bases on dengue and gender will be the launching of an expanded version of DengueNet in December 2005. DengueNet is a new global surveillance tool being developed in partnership with WHO and designed to improve surveillance of dengue worldwide. It allows for the breakdown of dengue cases and deaths by age and sex, and as such has the potential to provide data on the sex distribution of dengue cases and deaths from many countries.

Methods: This paper will review evidence on the relationship between sex, gender and dengue, including data from DengueNet that will be collected by February 2006, using literature searches and standard statistical methods. The aim of the paper will be to identify gaps in the knowledge base, and discuss possible ways of overcoming these gaps including the use of DengueNet.

Results: This section of the paper will discuss results of the literature search as well as available results from DengueNet.

Conclusions: The conclusions will discuss possible ways of overcoming gaps in knowledge.

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Women in Tibet - Powerless Against Infectious Diseases?

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Background: This paper argues that women in the Tibetan Autonomous Region are vulnerable to STI and HIV infection. Surrounded on almost every border by regions with concentrated epidemics, experiencing high levels of interregional migration and home to a large and well-established sex industry, the TAR displays many of the factors that have sustained concentrated epidemics in other parts of China. And just as elsewhere in China women face increased vulnerability to STI and HIV infection, in the TAR this risk is exacerbated by exclusionary economic growth, structural impediments and gender constructions that undermine women's capacity for adequate health seeking behaviours.

Methods: The areas where women's position greatly increases their vulnerability to STI and HIV infection are identified through focus group discussions, in-depth interviews, and reports of outreach to sex and transport

workers and field observations. In addition, this paper assesses the existing capacity of community level government agencies in intervening and the obstacles they face in preventing an HIV epidemic in the TAR.

Results: Women in the TAR are especially vulnerable to STI and HIV infection, which can be seen through an evaluation of: current levels of sexual health knowledge; sexual health seeking behaviours and practices of men and women in the TAR; changing sexual behaviours and occurrence of STIs among men and women, and; levels of sexual health care available to people in the TAR. Gender-specific factors augment this vulnerability, such as structural impediments that restrict women's access to adequate education, employment and health care.

Conclusions: Women in the TAR possess extremely low capacity for health seeking behaviours that would help protect them and their communities from STI and HIV infection. STIs are inadequately treated and HIV largely undetected. Increased support and greater capacity building of community level government agencies is necessary along with a concerted and well-directed effort to inform people, and in particular women about the real threat they face.

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HIV and Women - Gender Perspectives among HIV Infected Indian Population

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Background: The spillover of HIV/AIDS epidemic to women will have grave consequences in developing countries like India. A retrospective analysis of a nationally representative group of HIV seropositive individuals was done to understand the perspectives of HIV infected Indian women.

Methods: During the period from January 2002 to June 2005, a total of 1864 individuals, diagnosed HIV seropositive at the National HIV Reference Centre, All India Institute of Medical Sciences, India, were included in the analysis. CD4 counts were determined using standard whole blood lysis technique (BD Biosciences, USA) and HIV-1 viral genomic RNA was quantified using AMPLICOR HIV-1 Monitor test (Roche Diagnostics). Comparisons of distributions among age, major routes of infection, sexually transmitted diseases and antiretroviral treatment were performed between male and female patients using a Chi-Square test. Student's t-test was used to compare the average CD4 counts and plasma viral load among males and females.

Results: Of the total HIV infected cases, 25% were women. The mean age at the time of diagnosis of HIV infection in females was 29.4 years. The HIV infected women formed a greater proportion (85.3%) of sexually active age group as compared to HIV positive males (81.1%). The major route of HIV acquisition (64.2%) in females was heterosexual contact with their respective spouse, in contrast to a high proportion of men, who had heterosexual contact with commercial sex workers. Most of the HIV-infected women in the study group belonged to lower socio-economic status, were not educated and only 22.5% were receiving antiretrovirals. The women were found to have a high median CD4 T cell counts and low viral loads as compared to their male counterparts. The prevalence of sexually transmitted diseases in females was 2.2% higher than males.

Conclusions: A host of socio-cultural and economic factors rooted in gender power inequities will govern the course of HIV epidemic in India. This gender perspective must be taken into consideration during formulation of preventive and treatment guidelines for HIV/AIDS in our highly diverse and populated country.

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Beyond Knowledge and Condoms: Sex Workers in Israel Describe Their World of Sex Work and Barriers to Safer Sex

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Background: Female sex workers (FSWs) are a key core transmitter group for sexually transmitted infections (STIs) and one widely targeted for STI interventions. Many FSW studies have identified STI and condom use knowledge and reported condom use as primary risk factors and these have largely been the target of interventions. Violence, coercion, economic difficulties and control by pimps have been identified less frequently as STI risk factors. Trafficked FSWs are an emerging group of interest.

Methods: Qualitative interviews were conducted with 11 FSWs in Israel, including six victims of trafficking. Participants were recruited from a free STI clinic, a shelter for victims of sex trafficking, and a detention center for illegal female migrant workers. Each FSW participated in up to three in-depth interviews discussing work conditions, pimps, clients, use of condoms, violence and conflict.

Results: The FSWs interviewed reported working in a wide range of environments including brothels, streets, call girl agencies, private rooms and private apartments. All women reported consistent condom use with clients however they frequently described clients who asked not to use condoms. FSWs working on the street and in private rooms also discussed other FSWs working alongside them who frequently accepted clients without using condoms for extra money. Additional problems described included violence, rape, clients removing condoms during sex, being fined by pimps for refusing clients who refused condoms, and total physical and financial control by pimps.

Conclusions: The nature and setting of sex work make STI interventions especially challenging in certain environments. Existing interventions tend to focus on improving the STI knowledge and condom use of FSWs while failing to focus on other factors of STI risk including violence, coercion and underlying structural economic issues. Innovative interventions are needed that also address these additional barriers to practicing safer sex.

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WITHDRAWN

Plenary Session 4-D

Toxoplasmosis

Friday, March 17, 2006, 4:00 pm - 5:30 pm

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Epidemiology of Toxoplasmosis In Ghana

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Background: Congenital toxoplasmosis is rare but has more severe consequences on the eye and central nervous system causing abortions, stillbirths and hydrocephalus. Hence many advanced countries routinely screen women of child bearing age (WCBA) to treat and prevent possible congenital transmission. *Toxoplasma* infection is reported to cause abnormalities in pregnancies in Ghanaian women but comprehensive research on human toxoplasmosis in Ghana is lacking. This work was part of a preliminary study on the epidemiology of human toxoplasmosis in Ghana.

Methods: The study involved 80 individuals consisting of 56 females (30 eye patients and 26 pregnant women in their 2nd or 3rd trimester) and 24 males aged 10-70 years. Eye patients recruited for the study had presented with toxoplasmosis related eye lesions and pregnant women were recruited by interview and past medical records. Patients were divided into 3 infection risk categories according to their response to questionnaire. Blood and urine samples were collected from each individual. Sera were tested for anti-*Toxoplasma* antibodies by Dye Test (DT) and urinary *Toxoplasma* antigens were detected by membrane-based ELISA (UAgE).

Results: The Table below summarizes the infection status of patients by infection categories. There was antibody sero-prevalence of 82.5%, 17.5% sero-negative, urinary antigen prevalence of 66.3% and 33.7% were antigen negative. About 93.0% of the patients had been infected and 62.5% of them were females. Eleven out of 26 pregnant women had on-going, and 11/26 as well, had past infections. The remaining 4 were uninfected. Among the 30 female eye patients 25 were WCBA (18 - 45 years) whilst 5 were below or above that age group (≤ 10 or ≥ 46 years). Seventy-six percent of the WCBA had on-going infections, 20.0% had past infections and 4.0% were uninfected. All the men had been infected. On-going infections were 79.2% and past infections, 20.8%.

Conclusions: Women could be more at risk of *Toxoplasma* infections than men. About 58.0% of the pregnant women could be at risk of infecting their unborn babies. Absolute contact with contaminated environment could be an important mode of toxoplasmosis transmission in Ghana.

Table Infection status according to infection risk category

Infection risk categories	On-going infection ^a (n=53)		Past Infection ^b (n=21)		Uninfected ^c (n=6)	
	M	F	M	F	M	F
Category I ^d (n = 33)	7	15 (5)*	2	7 (5)	0	2 (1)
Category II ^e (n = 34)	7	12 (3)	3	8 (5)	0	4 (3)
Category III ^f (n = 13)	5	6 (3)	0	2(1)	0	0
Total ^g (n = 80)	19	33 (11)	5	17 (11)	0	6 (4)

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Perception of Pregnant Women Towards Threat of Congenital Toxoplasmosis in Cali, Colombia

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Background: Although *Toxoplasma gondii* can cause severe fetal damage, little is known about women's perception toward the possibility of congenital Toxoplasmosis in her offspring. The aim of this study was to assess pregnant women's knowledge and perception of Toxoplasmosis and their decision making regarding the hypothetical scenario of congenital infection in Cali, Colombia.

Methods: A field tested, standardized questionnaire was orally administered to a random sample of 89 women attending prenatal visits at 6 clinical facilities across Cali, Colombia. Women were asked about sociodemographic information, education, previous pregnancies, social network, knowledge of Toxoplasmosis and risk factors for transmission. They were also asked to respond to the hypothetical situation of congenital Toxoplasmosis in four clinical scenarios: 1) 90% chance of mild infection 2) 50% chance of moderate infection, 3) 15% of severe infection and 4) 100% chance of severe for comparison.

Results: Over half of the pregnant women (52.8 %) had not heard of Toxoplasmosis. Women above age 25 ($p=0.008$), with advanced education ($p=0.22$), and higher SES ($p=0.005$) were more likely to have heard of Toxoplasmosis than their counterparts. Nevertheless, only 45% of these women named at least one accurate way to prevent Toxoplasmosis. Women's choices in facing the possibility of congenital Toxoplasmosis are shown in Table 1.

Intervention	90% chance of mild infection	50% chance of moderate infection	15% chance of severe infection	100% chance of severe infection
No intervention	7%	7%	12%	12%
Drug treatment	92%	93%	70%	54%
Abortion	1%	0%	18%	34%

Women were more than twice as likely to choose abortion in 100% chance of severe infection than in 15% chance (OR= 2.32, $p=0.017$). In multivariable analysis, the single predictor of choosing treatment was seeking their mother's advice ($p=0.052$), in choosing abortion was not seeking mother's advice ($p=0.051$), and for no treatment was having being under age ($p=0.047$)

Conclusions: Pregnant women lack or have inaccurate information regarding Toxoplasmosis transmission during pregnancy and its consequences. Most of the women would be willing to receive treatment in case of congenital infection, and abortion would be a decision in nearly 1/5 of the women in severe cases. In these women, mother's advice and age appear to significantly influence these decisions.

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Seroprevalence of Toxoplasmosis in Pregnant Women in Cali, Colombia

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Background: the last national surveillance for toxoplasmosis in Colombia was performed 25 years ago. At that time the overall seroprevalence in the west part of the country was 36.1%. Currently, local physicians appear to encounter patients affected with this parasite with some frequency and severity, but no epidemiological or clinical studies have been done recently. The aim of this study was to determine the seroprevalence of *Toxoplasmosis gondii* infection in pregnant women in Cali, Colombia at the present time

Methods: a cross-sectional study was performed in pregnant women at their routine prenatal care visit or during hospitalization from July to November 2005. They were tested for Toxoplasma IgM and IgG antibodies, using the MEIA method (AxSYM, Abbott). Demographic variables were also recorded.

Results: A total of 927 pregnant women were tested. Their average age was 24.97 +/- 6.1 years, and their average gestational age was 22 +/- 11 weeks. The prevalence of positive Toxo IgG was 46.17 % (95% CI 42.92% - 49.44%) and of Toxo IgM positive was 2.48 % (95% CI 1.5 - 36%). The seroprevalence increased with age : 14 - 19 yo : 39.6% (95%CI 32.33 - 47.3%) , 20 to 29 yo : 43.64% (95%CI 39.19 - 48.17%), and 30 to 39 yo: 57.14% (95%CI 49.6 - 64.43 %). This increase was statistically significant (Chi square for linear trend=11.107 $p=0.00086$). The seroprevalence of Toxo IgG positive pregnant women were also different among Social Economical Strata (SES): in Lower SES: 50.0 % (95%CI 45.71- 54.47%), Medium SES: 37.6% (95% CI 31.6 -43.99%) and in High SES: 33.3% (95% CI 15.63 -55.3%). These differences were statistically significant. (Chi square for linear trend=11.587, $p=0.00066$). The increase in the seroprevalence by age was more significant in pregnant women of lower SE (Chi square for linear trend=9.53 $p=0.002$)

Conclusions: Unlike other regions of the world where the prevalence for *T.gondii* infection has diminished in the past years, in Cali, Colombia, our seroprevalence data appears to support no change over the past 25 years with perhaps a slight increase. The lower SES had a higher prevalence. Further studies are warranted to investigate the health burden brought by toxoplasmosis on habitants of Cali, Colombia.

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Congenital Toxoplasmosis in Serbia: Prenatal vs. Postnatal Diagnosis

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Background: The protozoan parasite *Toxoplasma gondii* has long been known as the causative agent of congenital toxoplasmosis, a potentially serious fetal infection. We present the results of a laboratory-based study on prenatal vs. postnatal diagnosis of congenital toxoplasmosis in Serbia.

Methods: The study series included 34 mothers suspected of *T. gondii* infection in pregnancy in which prenatal diagnosis was performed (group 1), and 999 infants (aged 0-1 years) tested between Nov 1995 and Oct 2005. Of the latter, 929 were referred by the Institute for Neonatology as prematurely born (group 2), and the remaining 70 by various pediatricians for clinical signs suggestive of congenital toxoplasmosis (group 3). Prenatal diagnosis included detection of specific IgG (including IgG avidity), IgM, and occasionally IgA antibodies in maternal serum, amniotic fluid and cord blood, as well as attempts at isolation of the parasite by bioassay. Postnatal diagnosis was based on positive serology up to one year of age.

Results: In group 1, of the 22 (64.7%) seropositive mothers, congenital infection was diagnosed in 9 (40.9%) fetuses (confirmed by parasite isolation in 4). Of the postnatally tested infants, 52.9% in group 2 were positive for *T. gondii* in at least the first serum sample. Further testing revealed 4 (0.4%) infants fulfilled the criteria for the diagnosis of congenital toxoplasmosis. Conversely, in group 3, while 47.1% infants tested positive in the first serum sample, 3 (4.3%) were diagnosed with congenital infection.

Conclusions: Rather than indicate the actual prevalence of congenital toxoplasmosis in Serbia, the results of this study show that in the absence of a nation-wide program for the prevention of congenital infection, prenatal diagnosis relies on the knowledge and conscience of individual gynecologists; conversely, neonatologists see the effect of undiagnosed maternal infection but are able to suspect congenital infection only in case of early clinical signs. Given that the presented infection rates do not include cases of congenital infection inapparent at an early age (these remain candidates for late sequelae), the presented results strongly support the need for prenatal diagnosis.

Plenary Session 5-C

Advances in Prevention of Mother to Child HIV Transmission

Saturday, March 18, 2006, 10:00 am - 11:00 am

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Prevention of Mother -to-Child Transmission of HIV in Uganda. Effectiveness of the Pilot Program

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Background: After successful reports of the efficacy of short course anti retroviral therapy in the peripartum period for reduction of HIV transmission from mother to child, the Ugandan Ministry of Health, and other partners initiated a pilot project to administer short course zidovudine (AZT) or nevirapine (NVP) to HIV positive pregnant women.

Methods: The goal of this study was to evaluate the effectiveness of the Ugandan prevention of mother to child transmission (PMTCT) of HIV pilot program. Specifically, to determine characteristics associated with HIV test acceptance among pregnant women, to determine factors associated with infant feeding choices by HIV positive women in the context of free formula, and to determine the effectiveness of short course NVP versus AZ.

We analyzed data from four pilot sites; Lacor, Mengo, Mulago and Nsambya hospitals. To compare the effectiveness of AZT versus NVP, we performed propensity score method analysis adjusting for propensity to receive AZT and other known risk factors for HIV transmission.

Results: Between January, 2000- November, 2002, 20,972(67%) of the 31,953 women who received pre test counseling at the four hospitals accepted HIV testing. Age, education level, past HIV test, and single marital status were associated with test acceptance. Of the 1,593 women enrolled in the pilot program, 67% chose to breastfeed even when free infant formula was provided. Education level, partner's knowledge of the HIV status, presence of HIV related event, and past antiretroviral drugs use predicted formula feeding. NVP and AZT were effective in reducing transmission of HIV from mother to child at 13.3% and 13.6%, respectively. The risk of HIV transmission tended to be higher among women who received AZT compared to NVP after adjusting for propensity score, infant feeding, method of delivery, and stage of HIV disease (odds ratio 2.02, 95%CI, 0.77-5.25).

Conclusions: In this pilot PMTCT program, acceptance of HIV testing was inadequate at 67%. Provision of free formula did not guarantee formula feeding. Short course AZT and NVP were effective in preventing MTCT of HIV in a field setting.

Characteristics associated with HIV test acceptance, multivariable analysis		
Characteristics	Odds ratio	95% CI
Lacor	0.41	0.38-0.44
Mengo	3.65	3.15-4.24
Mulago	0.73	0.69-0.78
Nsambya	1	
Age	1.01	1.0-1.01
Education level		
None	1.17	1.02-1.35
Primary	1.41	1.26-1.58
secondary	1.25	1.12-1.39
post secondary	1	
Single	1.27	1.11-1.33
Past Health education	1.17	1.10-1.23
Past HIV test	1.52	1.43-1.62

Characteristics associated with formula feeding, multivariable analysis		
Characteristics	Odds ratio	95% CI
Age	1.06	1.02-1.09
Education level		
None	0.63	0.55-0.72
Primary	0.62	0.61-0.63
Secondary	0.58	0.52-0.65
Post secondary	1	
Married	0.59	0.55-0.64
Work outside the home	1.32	1.13-1.53
Past ARV therapy	1.86	1.47-2.34
Partner aware of HIV status	3.53	1.20-7.30
HIV event	1.34	1.33-1.36
Vaginal delivery	1.23	0.79-1.94

Risk of HIV transmission among women who received AZT compared to Nevirapine, multivariable analysis		
Characteristic	Odds ratio	95% CI
AZT		
Nevirapine	2.02	0.77-5.25
Propensity score	0.70	0.50-0.97
Formula fed	0.27	0.10-0.71
Vaginal delivery	1.37	0.44-4.28
HIV related event	1.42	0.51-3.97

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Assessing the Knowledge of Traditional Birth Attendants on Vertical Transmission of HIV.

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Background: About 90% of paediatric cases of HIV are attributed to perinatal transmission and over 60% of transmission from mother-to-child occurs during delivery. About two-thirds of Ghana's population live in rural communities and in such communities most births are received by Traditional Birth Attendants (TBAs). It is therefore very clear that TBAs play a crucial role in matters relating to childbirth, its related complications as well as mother-to-child transmission (MTCT) of HIV especially in areas with high seroprevalent rates. The study was therefore primarily aimed at assessing the level of knowledge of TBAs on MTCT.

Methods: About 466 TBAs were involved in the study which was carried out through administration of questionnaires, semi-structured interviews and focus group discussions in 35 communities in four districts in northern region of Ghana.

Results: Most TBAs had a fair knowledge of HIV/AIDS; its mode of transmission and prevention but held some misconceptions about MTCT. Many had not heard of anti-retroviral drugs and only few could tell what they do.

Conclusions: The training of TBAs needs to be reviewed to include ways and means of minimising the risk of MTCT especially in areas with high seroprevalence. Encouraging antenatal VCT for women in areas with high seroprevalence and initiating a national MTCT prevention programme could all help in the fight against MTCT of HIV.

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Developing and Piloting Testing and Counselling (TC) for Prevention of Mother-to-Child HIV Transmission (PMTCT) Support Tools

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Background: Integrating Testing and Counselling (TC) into PMTCT settings is an essential step in providing appropriate PMTCT interventions to HIV-positive women, their babies, and families. The *TC for PMTCT Support Tools* were developed to help providers in resource-constrained settings effectively deliver TC in antenatal care (ANC), labor and delivery (L&D) and post-delivery (PD) settings. The goals of the tools are to facilitate the delivery of essential PMTCT messages and to support routine provider-initiated testing. This will in turn improve the uptake of HIV testing among pregnant women and their partners and increase the number of pregnant women who know their HIV status and access PMTCT interventions.

Methods: The components of the *Support Tools* package include flipcharts to guide HIV pre- and post-test counselling sessions, client information brochures to reinforce take-home messages, protocol wall charts to outline essential steps in providing TC for PMTCT, and a reference guide to provide guidance for integrating TC into PMTCT settings. Pilot evaluations were conducted in Nigeria, Kenya, and Botswana where health care workers (HCWs) used the flipcharts to guide pre- and post-test counselling sessions in ANC and L&D settings. Focus groups and individual interviews were conducted with 224 clients and 74 HCWs to assess the usability, acceptability and appropriateness of the flipcharts.

Results: Clients in the 3 countries reported that the flipcharts were helpful, and 98% of clients reported learning new information. HCWs in the 3 countries reported that the tools were easy to use and helped communicate critical messages to clients, and 89% indicated that they would use the tools regularly.

Conclusion: The findings indicate that the tools are useful in PMTCT settings and are acceptable to HCWs. The *Support Tools* were produced by CDC with international partners (WHO, UNICEF, USAID, and other

international partners) and are available for local adaptation and use in resource-constrained settings. Next steps include an evaluation of the impact of the tools on increasing HIV testing uptake and promoting adherence to PMTCT services.

Plenary Session 5-D

Refugee & Immigrant Women's Health

Saturday, March 18, 2006, 10:00 am - 11:00 am

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High Rates of HIV Transmission in Refugee Settings: A Durkheimian Analysis of Macro-social Processes

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Background: In refugee settings, HIV transmission among women is hastened by increased vulnerability to sexual violence, earlier onset of sexual activity, prostitution as a survival strategy, migration from areas of low to high prevalence, and an unsafe blood supply for transfusions. Current UNAIDS guidelines for HIV response in refugee settings includes universal medical precautions, condom availability, safe blood transfusions, and basic information. These guidelines fail to address the root causes of HIV transmission among women in refugee settings, leading to missed opportunities for prevention.

A number of authors have reported individual upstream factors affecting HIV-associated risk factors. However, a theoretical framework relating macro-social conditions to high rates of HIV transmission in refugee settings has not yet been described. This analysis applies a conceptual model rooted in Durkheimian sociologic theory put forward by Berkman et al (2000) to the current problem. Their model envisions a "cascading causal process" by which macro-social processes condition social networks to exert an influence on health.

Methods: A review of the related sociobehavioral and epidemiologic literature was conducted, identifying macro-social conditions which influence behaviors related to HIV transmission in refugee settings. These factors were then placed within Berkman's conceptual model.

Results: Socioeconomic factors (financial insecurity and underemployment), cultural conditions (release from social controls), political factors (limited recourse to legal and social protection), and social change (forced migration leading to social disruption and systematic rape) were found to be associated with downstream social and individual HIV-related risk behaviors.

Conclusions: In this study, a conceptual model rooted in Durkheimian sociologic theory was employed to demonstrate the relationship between macro-social processes in a refugee setting and increased HIV transmission rates. By addressing social-structural conditions there is potential to prevent the downstream conditions contributing to increased HIV transmission among women in refugee settings.

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Survey of Commercial Sex Workers in Post-Conflict Liberia, West Africa: HIV/AIDS Awareness, Expatriate Clientele, and Transaction Dynamics

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Background. From 1989-2003, Liberia endured 14 years of civil conflict during which 1/2 of the population was displaced and 10% died. Presently, security is provided by a United Nations multinational peacekeeping force (UNMIL) of 15,000 soldiers and civilians. Best available data reveals: 85%

unemployment, 63% adult illiteracy, US\$ 158 GDP per capita, 76% living on <US\$ 1/day, and an estimated HIV prevalence of 10-12% (UNDP 2004). Unpublished sources suggest an HIV rate double that estimate.

Methods. In Fall 2005, we conducted interviews of 285 commercial sex workers (CSWs) in the capital of Monrovia regarding HIV/AIDS knowledge, clientele, socioeconomic status, and transaction dynamics. Here we summarize selected parameters for a random subset (n = 57) of the sample population.

Results. Subset mean age was 24.8 with the mean highest educational level attained being the 5th grade. Though working in Monrovia, 63% were from the hinterland or adjacent countries. Some form of FGM was acknowledged by 49%. The mean number of clients per week was 7.4, with a mean transaction charge for vaginal intercourse of US\$ 5.80 (range: US\$0.60-30.00). Forty percent offered anal intercourse for a mean charge of US\$ 10.60 (range: US\$1.50-30.00). Regarding knowledge and condom use, 75% were aware of HIV/AIDS and 70% "always insisted" upon condom use but 44% would "often" agree to forego condom use or charge a higher fee to do so. About 59% expressed concern about becoming HIV infected and 74% reported having been "treated" for another STD. Finally, 50% of respondents reported having foreign clients which constituted, on average, 25% of their client base. While 87% of these expatriate clients were from West and West Central Africa, other source regions included Asia, SE Asia, North America, Europe, and the Middle East.

Conclusions. These findings suggest fluid transaction dynamics for high-risk behaviors and potential for co-infection with multiple HIV-1 strains and/or HIV-2. Future interventions and health promotion programs should prioritize: (1) HIV knowledge, adult literacy and alternative livelihoods for CSWs; and (2) linkages related to global transmission, porous regional borders and urban-to-rural mobility.

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Vulnerability of Homeless Women to Infectious Diseases

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Background: Substantial number of women are homeless in South Africa and generally all over the world. These women are becoming increasingly vulnerable to health hazards including infectious diseases. These women live on the streets, in shacks and cardboard boxes; and in city shelters. Their peculiar circumstances expose them to infections, particularly HIV, TB and STD among others.

Methods: This paper is based on insights and findings from a community-based cross-sectional study of homeless women and their vulnerability to health hazards in Johannesburg, South Africa. Inferences were drawn from data collected, including personal experiences expressed by homeless women themselves. Inputs from individuals and organizations that are involved and work in the area of homelessness were also included.

Results: Some of the major findings of the Johannesburg study were that:

Substantial population of homeless women live under extreme poor housing conditions

Increasing mortality as a result of HIV among homeless women

Leading infectious diseases among homeless women include STD, VIH and TB.

Skin infections are on the increase among these women

Homeless women have inadequate access to water, sanitation and health care services

Determinants of vulnerability to infectious diseases are overcrowding, poverty and exposure to extremes of environmental hazards. Poverty is a leading cause of inadequate housing among women and also compromises adequate nutrition; a combination of these increases their vulnerability to infectious diseases.

Conclusions: Homelessness, poverty and policy gaps are some factors responsible for the vulnerability of homeless women to infectious diseases in RSA. Strategies for intervention should include increasing awareness of the

vulnerability of women to infectious disease and more importantly calling for action. Proper identification of all appropriate stakeholders in developing intervention plans is critical. Homeless women's vulnerability to infectious diseases are complex and multifactorial therefore an interdisciplinary and inter-organizational approach to interventions is pertinent.

Plenary Session 6-B

Innovative Approaches to Infectious Disease Prevention

Saturday, March 18, 2006, 11:00 am - 12:30 am

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Integrated Management of Women's Infectious Diseases in Africa (IMOWIDA)

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Background: No single remedy is in itself and by itself sufficient in countering the scourge of women's infectious diseases the world over.

For any remedy to be effective, it must be holistic, far-reaching in consequence and provide an end-to-end solution.

Integrated Management of Women's Infectious Diseases in Africa (IMOWIDA) seeks to employ a multi-faceted, multi-disciplinary and multi-variant approach in countering the prevalence, spread, persistence, and consistence of infectious diseases affecting women, in Africa in particular, the world in general.

Methods: An Integrated approach depicts and solicits a compromise of disparate variables fusing together to form a formidable weapon against infectious diseases affecting women.

This involves, but is not limited to, health workers, researchers, donors, social workers, professional caregivers, educationists, politicians, governments, non-government organizations and individuals. The roles they each play can be managed, coordinated and channeled in a concerted manner. This will eliminate process duplication, time wastage, and cross-purposes.

Disparities in income, education, power, perceived equality and other demographic indices must be corrected.

The Integrated approach encompasses social, political, medical, economic, environmental, educational and sundry aspects.

Results: In some northern parts of Nigeria more than 60% of the married women live under the purdah system. Men are not allowed into their presence without express permission. And vice versa. Since the number of male professional caregivers is more it means information, health services, preventive medicine, and other social services rarely gets to the women.

Early marriages, as low as 12 years of age or less, have been recorded. This has been largely responsible for the high incidence of VVF and attendant opportunistic infections in these parts.

Conclusions: While immigration, war, poverty, illiteracy, discrimination, social miasma and environmental factors aggravate diseases in women in Africa, an integrated professional intervention can salvage the situation.

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A Pilot Study Determines Effectiveness of a Structured Religious Organization in Increasing Awareness of HIV and AIDS or HPV and Cervical Cancer

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Background: We explore the premise that churches and religious organizations have the credibility, structure and grass roots access to community people to serve as a major resource in prevention and awareness of

infectious and chronic diseases. With one district of the Women's Missionary Society (WMS) of the African Methodist Episcopal Church (AMEC), we determined basic knowledge about two prevalent infectious diseases with a viral etiology. Human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) and human papilloma virus (HPV) and cervical cancer were chosen because they are preventable and because of their high incidence in women who are African-American. During the previous year (9/04- 8/05), the AMEC recommended use of a WMS-produced manual in chapter meetings, dialogue and activities to learn about HIV and AIDS and its impact. No programmed information had been provided by WMS about HPV and cervical cancer.

Methods: A written survey contained two parts with 20 questions each. It was given on site to a study group composed of women attending an annual planning conference for WMS chapters. Thus, the group would be considered organization leaders. Similar questions were asked about cause, means of transmission, testing, prevention, prevalence and impact for HIV/AIDS or HPV/cervical cancer.

Results: The women (n=46) who returned surveys (65% return rate) ranged from age 26-82 with an average of 55 years. The average scores were 72% correct on the HIV survey and 47% correct on the HPV survey. Interestingly, 28% had about the same level of knowledge about HIV and HPV. Other demographical information included level of education, frequency of church attendance and participation in awareness events in the last year. At least 77% indicated that they were concerned about these diseases and would like to learn more about their impact, while 16.6% requested an urgent need to talk to someone further about the topics.

Conclusions: These results show a significant increase in knowledge base, willingness to learn about and discuss issues, and a desire to share information among those exposed to HIV and AIDS awareness programs through this religious organization.

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Self-Help Groups and Their Role in Women's Health and Empowerment

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Background: Self-Help Groups (SHGs) are small voluntary association of people from the same socio-economic background with a purpose of solving their common problems through self-help and mutual help. It is assumed that self-help groups will play a larger role in its contribution towards improving women's health and empowerment as well as for achieving 'Millennium Development Goals' in developing countries. These assumptions are largely based on the global neo-liberal agenda which suggests that the State should withdraw from social provisioning. The paper reviews scope and limitations of self-help groups in improving women's health and empowerment focusing on empirical work undertaken in one of the Indian States. This paper emphasizes the health and empowerment of women SHGs and explores the extent to which SHGs can be involved in attaining better health for women and children.

Methods: The paper is based on field surveys, interviews and select case studies on sample of two hundred women Self-help group members in Patna district of Bihar which also happens to be the poorest state of the country. The findings are based on qualitative and quantitative analysis which explore critically the linkages between SHGs, women empowerment and their health.

Results: The result shows that SHGs major activities are more focused towards saving and credit activities than on empowering women and facilitating access to health services. Although SHGs were expected to play a significant role in women health and empowerment, basic need of food, shelter and work came out as primary to their life and well being and without achieving or fulfilling these basic primary needs of food, shelter and work, we can not empower these women or provide better health and life.

Conclusions: It is concluded that solutions such as self-help which emanate from the international policy circles do not capture the contextual issues leading to instrumentalized approaches and sub-optimal results.

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The Real AIDS Prevention Project (RAPP): A Community-level HIV Prevention Intervention for Women and Their Partners

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Background: Early in the epidemic relatively few women were diagnosed with HIV infection and AIDS. Today, the HIV/AIDS epidemic represents a growing and persistent health threat to women in the United States, especially young women and women of color. In 2002, the leading cause of HIV infection among African-American and Latina women was heterosexual contact. In addressing HIV prevention needs among women, a community-level strategy is needed to increase consistent condom use by women and their partners and to change community norms so that practicing safer sex is seen as the norm.

Methods: RAPP is a community-based HIV prevention for women and their partners. RAPP is based on a mobilization model that involves a combination of activities that includes street outreach, one-one-one discussions called stage-based encounters, role model stories, community networks, and small group activities. These activities are conducted by outreach specialists or community health workers who represent the target women. The objectives of RAPP are to increase consistent condom use by women and their partners, change community norms associated with condom use and mobilize people in the community to be involved in HIV prevention activities.

Results: In a study conducted by the original researchers, interviews were conducted with 3,725 sexually active women of reproductive age in four matched pairs of communities. In this group of women, 73% were Black, 20% were White, and 7% were of other racial/ethnic groups; mean age was 25 years. Women in the intervention communities reported a greater increase in condom negotiation and consistent condom use with main partners than women in comparison communities.

Conclusions: Community-level HIV prevention interventions that are designed to account for gender and cultural differences by utilizing community health workers are found to be more effective and must continue to be developed, implemented, and evaluated. RAPP has the capacity to reduce HIV transmission risk behaviors and improve communication and negotiation skills necessary for women to improve their health outcomes and reduce their risk for HIV infection.

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Preventing HIV/STI by Covering the Cervix: Does it Make Sense? Evidence from a Community-Based Sample of Zimbabwean Women

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¹University of California San Francisco, San Francisco, CA, ²UZ-UCSF Collaborative Research Programme in Women's Health, Harare, Zimbabwe.

Background: The cervix is the primary site of many STI including HIV. There is both biological plausibility and epidemiologic evidence that covering the cervix may decrease infection risk in women. Previously, we collected pilot data indicating that the diaphragm is acceptable in Zimbabwe, a country where adult HIV prevalence is ~25%. Now, as evidence that such a female-controlled method is both needed and feasible, we present baseline data on disease prevalence and diaphragm insertion skills among women recruited to participate in a diaphragm phase III trial in Harare, Zimbabwe.

Methods: Women were recruited from the community, received a screening visit, including a questionnaire, laboratory tests for HIV, Chlamydia (CT), Gonorrhoea (GC), and trichomonas (TV), and practiced insertion of a diaphragm. Enrolled participants were further interviewed and evaluated for herpes simplex virus, type 2 (HSV-2), human papillomavirus (HPV) and bacterial vaginosis (BV).

Results: We analyzed data from the first 4684 women screened in Zimbabwe. Mean age was 29, 94% were married, 68% had one lifetime partner and 45% had 11+ years of education. HIV prevalence was 33% (by two rapid tests), 4% of women had TV, 2% CT and 1% GC (by DNA PCR). Only 62% reported ever using a condom. Although <1% had ever used the diaphragm previously, virtually all were able to insert it correctly (99%). Among the HIV-negative women who were enrolled into the trial (48% of those screened), 52% were found to be HSV-2 positive (by ELISA), 14% had at least one high-risk type of HPV (by DNA PCR) and 28% had BV (by Nugent score).

Conclusions: Diaphragm skills were easily taught in this diaphragm-naïve population. Bacterial cervical infections were low but viral disease burden was high. Thus, it is both feasible and highly relevant to evaluate new methods for disease prevention in this high prevalence area.

Plenary Session 6-C

Microbicides

Saturday, March 18, 2006, 11:00 am - 12:30 pm

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Microbicides: Preventing HIV and Other Infections in Women Around the World

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Background: Women comprise an increasing proportion of adults living with HIV/AIDS, both in the US and globally, with heterosexual transmission accounting for the majority of these cases. (UNAIDS, 2004) Women's HIV risk is exacerbated when they are in abusive relationships, using drugs and/or dealing with mental health issues or developmental disabilities.

Around the world, millions of women can't or don't insist on condom use with male partners. We urgently need disease prevention tools that don't require male partner participation. Microbicides - products designed to be used vaginally to reduce risk of HIV and other STDs - would give women the means to protect themselves when condom negotiation is not possible.

Methods: The Global Campaign for Microbicides is a grassroots effort to mobilize public demand for microbicides and other woman-controlled prevention options. Established in late 1999, the Campaign has recruited over 200 organizational co-sponsors, created grassroots sites throughout North America and Europe, and works with partners in India, Southeast Asia, and Africa. With the help of partners, we have influenced public investment through low-budget community education, constituency building, and media promotion strategies.

Results: Through concerted advocacy, global investment by the public and philanthropic sectors in microbicide research and development has more than doubled from US \$65 million to US \$142 million in 2004. In particular, US government investment in microbicide research tripled in ten years while the number of European governments investing in microbicides has increased from one to ten in the last few years.

Conclusions: In the face of the overwhelming HIV/AIDS pandemic, it is often hard to know how to respond, especially since it seems like such a distant issue to many people in North America and Europe. Demanding adequate investment into microbicide research and development is one concrete way in which citizens of donor nations can make a difference.

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The 5 P Challenges in Female-Initiated Methods Acceptability Research -- Products, Potential Users, Partners, Providers, and Promotion

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Background: Given that nearly half of new HIV infections globally are attributed to heterosexual sex and that many women are unable to negotiate male condom use, female-initiated methods are urgently needed. Research indicates that greater disease and pregnancy protection is achieved when women and men have more prevention choices. The female condom is the only barrier method besides the male condom that protects women from STIs, including HIV, and unintended pregnancies; currently, diaphragms, cervical caps, and microbicides are being tested for HIV prevention efficacy. Acceptability is key to female condom use, and will likely determine use of other physical or chemical barriers.

Methods: We reviewed acceptability studies of the female condom, diaphragm and candidate microbicides conducted in the last two decades to identify facilitators and challenges to use, approaches to assessing acceptability, efficacy issues, and research gaps. Integrating perspectives across contraceptive methods research led us to develop a heuristic multi-level framework of determinants of acceptance, negotiation, and sustained use of female-initiated methods that can guide future interventions and assessments.

Results: The 5 P challenges for these methods are Product, Potential Users, Partners, Providers, and Promotion. Product characteristics include insertion, aesthetics, lubrication, and cost. Potential user characteristics include knowledge, preferences, and practices. Partner issues include familiarity with the methods, communication, and resistance. Provider factors include adequacy of training and mitigating stereotypes about the methods. Promotion issues rest on reaching potential users -- women and men.

Conclusions: To increase use of female-initiated methods, further program and research initiatives are needed to help us better understand the nuances of method use for tailoring intervention and promotion strategies to specific social spaces and cultural contexts.

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Preclinical Safety and Efficacy Evaluations for developing Topical Microbicide Products

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Background: Topical microbicides represent an important strategy for preventing the transmission of HIV and other sexually transmitted infections (STI). Pre-clinical studies of topical microbicide products, using appropriate animal models for assessing safety of repeated product use, as well as efficacy in preventing transmission of STI are essential. The pigtailed macaque (*Macaca nemestrina*) model has been contracted by the NIH for standardized safety evaluations of vaginally applied topical microbicide products. This model is also being used to assess candidate products' efficacy in preventing cervical infections with *Chlamydia trachomatis*.

Methods: The safety profile of a vaginally applied topical microbicide product is determined by colposcopy, microbiology and pH measurements. Animals undergo 4 daily applications of a test product, with measurements collected prior to and 30-minutes after each product application, 24-hours after the final application and 3 days later to document recovery. Products graded as having an acceptable safety profile are recommended for further product testing to include efficacy studies for prevention of chlamydial infection. Efficacy studies are designed to assess a topical microbicide product's ability to prevent infection following a single challenge with *C. trachomatis*. Thirty minutes after a single intravaginal topical microbicide application, animals undergo direct cervical inoculation with a clinical isolate of *C. trachomatis*. Status of chlamydial infection is determined by weekly sampling for culture (active infection), NAAT (chlamydial RNA) and serology (circulating antibody to *C. trachomatis*), for 5 weeks after inoculation.

Results: Over 25 topical microbicide products have been evaluated in these standardized safety studies, eight of which have also completed anti-chlamydia efficacy evaluation.

Conclusions: Preclinical safety and efficacy evaluations are vital to microbicide product development and subsequent advancement to clinical trials.

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Lactocin 160 for Intravaginal Microbicide

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Background: The natural defense system fulfilled by vaginal lactobacilli can be used to develop a topical microbicide for the prevention and treatment of bacterial vaginosis (BV). A disturbed vaginal ecology, BV, creates a more permissive environment for acquiring HIV. Objective of the study is to determine the activity of the antimicrobial peptide in combination with lactic acid against BV associated organisms (*Gardnerella vaginalis*, *Prevotella bivia* and *Peptostreptococcus*).

Methods: A vaginal strain of *Lactobacillus rhamnosus* 160 capable of producing a ribosomally-synthesized antimicrobial peptide (bacteriocin) was used in this study. The bacteriocin designated as lactocin 160 was isolated from the medium supernatant using an 80% ammonium sulfate precipitation. The MIC of lactocin 160 was determined for three clinical isolates of each of the BV-associated microorganisms: *G. vaginalis*, *P. bivia* and *Peptostreptococcus* spp. Lactic acid was used in combination with the peptide to adjust the pH to the level of acidity in a healthy vaginal environment.

Results: Isolated from *Lactobacillus rhamnosus* 160 3.8 kDa peptide was active against *G. vaginalis* in the range of concentrations 1.5-25 µg/ml (pH 6.5) and had MIC <0.2 µg/ml at pH 4.5. Lactocin 160's MIC for *P. bivia* and *Peptostreptococcus* was 50 µg/ml at pH 6.5, and 6.4 µg/ml at pH 4.5.

Conclusions: The antimicrobial peptide produced by *L. rhamnosus* 160 is active against BV associated organisms, especially when combined with lactic acid and can be used for treatment of BV and prevention of HIV.

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Promising Gel Formulation for Women to Prevent Sexually Transmitted Diseases and Unintended Pregnancy

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Background: As the number of people infected with HIV is growing dramatically worldwide, it is primordial to improve strategies to control its progression. As there is no vaccine against HIV yet, preventive measures are the only tools that can reduce its transmission. As women are more susceptible than men to HIV and other sexually transmitted infections (STIs), the development of safe and effective microbicides under the control of women is very crucial. We have developed a gel formulation containing sodium lauryl sulfate (SLS) called Invisible Condom® that can be effective to protect against STIs when applied to the cervico-vaginal mucosa of women. The gel itself acts as a physical barrier by entrapping pathogens, whereas SLS inactivates them by denaturation of proteins essential for infectivity.

Methods and Results: Invisible Condom® is effective to protect mice following intravaginal challenge with HSV-2. In a rabbit model, it demonstrated contraceptive efficacy. The formulation is well tolerated when given intravaginally once or twice daily to rats for 6 months or to rabbits for 12 months. It is also well tolerated when administered intrarectally to rabbits for 14 days. Invisible Condom® is non-irritant for skin, eye, buccal and penile mucosae in animal models. Furthermore, Phase I trial involving 70 healthy volunteers (47 women and 23 men) was carried out in Canada to evaluate the safety and acceptability of the Invisible Condom®. No genital ulceration or

lesions were seen during gel use. There was no significant change in vaginal pH nor vaginal flora over product exposure period. No serious adverse events (AE) were reported. None of the 47 women had to stop product application because of AE. Overall, the product was well tolerated and acceptable by women and their male partners. A Phase I/II extended safety trial of Invisible Condom® in 452 healthy women is presently ongoing in Cameroon.

Conclusions: Invisible Condom® is well tolerated and could be a candidate of choice as microbicide. The impact of such a preventive tool on public health could be tremendous as it may reduce the number of people suffering from HIV/other STIs as well as reduce the cost of treatment of these diseases and their complications.

Plenary Session 6-D

Stigma & Infectious Diseases

Saturday, March 18, 2006, 11:00 am - 12:30 am

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Theoretical Exploration of HIV-related Stigma among Women

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Background: A significant body of literature examines stigma as a relationship between attributes and stereotypes as evidences of established normalcy and deviance labels. Theoretical exploration of stigma among women with HIV remain underdeveloped. This overview examined application of theories of stigma on women with HIV infection.

Methods: This literature review used medical, psychological and sociological databases, extracting peer-reviewed articles on HIV-related stigma in women. Search terms included women, HIV, stigma, discrimination; Studies were restricted to the United States (US).

Results: 14 studies addressed HIV-related stigma experienced by women. Two studies were metasyntheses on stigma studies. Thirteen studies either referred to Goffman's (1963) work on stigma or drew upon social psychology theories based on Goffman's construct of stigma as a 'marked identity'. One study focused on women's experience with HIV-related stigma providing alternative theories from a feminist framework that explained women's perspectives.

Conclusions: Psychosocial issues of stigma continue to expand Goffman's work from 1963. Several variations of Goffman's theories are available, but the main theme continues to be a relationship between negative attributes and stereotypes. This leads to segregation between people assumed to be normal or deviant, based on attributes and stereotypes. The relationship between stigma and HIV historically refers to 'Gay Related Infectious Disease' or GRID, as first identified in the US.

Implications: Mainstream stigma theories should encompass changing faces of HIV epidemic and include youth, women and minorities' issues. These theories also exclude disclosure, secondary infection to sex partners and infants born to women, particularly women of color. Lived experiences of HIV need re-evaluation contextualized to sexual networks, poverty, disclosure-related violence, alternative family structures and social support. Goffman's theory of 'spoiled identity' needs to expand and represent women and children with HIV who may not display negative attributes (immoral behavior) and stereotype (individual sexual preferences).

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Accounts of Gender-based Tuberculosis Related Stigma Reported in the Disease-free General Population of Rural Maharashtra, India

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Background: Stigma challenges social scientists and policy makers concerned with public health, because it contributes to suffering, delays diagnosis and necessary help seeking and, leads to irregular or discontinued treatment. These are characteristic features of stigmatised infectious diseases, especially tuberculosis (TB). Social responses to gender may interact with social disqualification and discrimination targeting TB.

Methods: This study aimed to clarify the influence of gender on contexts of stigma in the population where people with TB live. Rooted in a cultural epidemiological framework, it used locally adapted EMIC interviews to study interrelated features of gender and TB related stigma among the general population without TB in Western Maharashtra, India. Interviews inquired about respondents' ideas about TB based on idealized vignettes depicting characteristic features of the disease affecting a man and a woman. A sample of 160 respondents (80 men and 80 women) was interviewed with same-sex and cross-sex vignettes.

Results: Elaborating gender-specific features of TB-related stigma, this study highlighted the importance of addressing public health concerns about minimizing the spread of TB, but distinguishing such concerns from exaggerated fears of spread that contribute to stigma. Problems in current marriage were reported frequently for male vignettes being in role as a family head. Nevertheless, spouse support was acknowledged frequently for male vignette indicating lesser vulnerability of male in the context of marriage. While men face social rejection from outside, women have a double burden of social rejection at the family as well as community level. Regarding help seeking, private sector was frequently recommended for male vignette often associated with their mobility, whereas home-remedies were reported for female vignette than male vignette suggesting lack of access to health facilities and lesser financial authority of women.

Conclusions: To ensure effective, responsive services, DOTS programmes should recognize local gender-specific features of TB-related stigma in TB endemic communities.

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HIV, Isolation and Women over 50

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Background: The Centers for Disease Control reports for the years 2000 through 2003 an increase in the estimated number of HIV/AIDS cases in the age groups of 45-54, 55-64 and over 65. Concurrently survival rates after AIDS diagnosis decreased as age of diagnosis increased among persons at least 35 years old at diagnosis. Of the 32,842 reported cases of HIV infection among adults 31% are female. (2003).

It is apparent in daily, clinical practice that many HIV positive women over 50 are impacted by socio-economic disadvantage, decreased social supports and stigma. How do feelings of isolation affect this cohort? While research and measurement tools exist to test quality of life, depression and loneliness, tools to assess the subjective concept of isolation are lacking.

What does the concept of isolation mean to women over 50 living with HIV?

Does isolation differ from depression and loneliness?

Does culture and socio-economic status impact how one defines isolation?

Methods: A multimethod integrated design study will commence with sampling of HIV positive and HIV negative women. Rigor will be instituted to include women over 50, from similar behavioral and demographic status. A qualitative tool to evaluate isolation level will be tested and validated. This tool will then be operationalized to divide HIV positive women over 50 into control-non isolated women and test-isolated women. Measures of

CD4 counts, HIV 1 viral load measurement and adherence to treatment will be quantified.

Results: It is our hypothesis that feelings of isolation and fragility of social supports, not merely HIV status conversely impacts positive treatment outcomes of women over 50. Subjective definition of isolation is greatly affected by variables such as culture and socio-economic status.

Conclusions: The evidence based linkage of isolation and poor treatment outcome in the HIV positive women over 50 will aid in the formation of successful intervention and community programming. Qualitative measure and validation of isolation and effects of culture and socio-economic influence could greatly impact success of these programs in populations at great risk. It is our hope that this presentation will assist in this venture.

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Property Grabbing and Will Writing in HIV Infected Couples in Lusaka, Zambia

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Background: High rates of HIV and poverty place women in a precarious economic situation in Lusaka, Zambia. Mortality from HIV infection is high, leading to the creation of many single headed households. In a male-dominated society, women have little legal power to protect their assets in the event of their partner's death. One of the most prevalent forms of gender discrimination is property-grabbing, in which the male's family claims the property of the deceased from the widow and children.

Methods: The Zambia-Emory HIV Research Project collected 184 wills from individuals in cohabiting unions where one or both of the individuals were HIV positive. The wills were analyzed to identify patterns of will writing and content of wills.

Results: The analysis found that men were more likely to write a will, women were less likely to own household consumer goods, and men were more likely to have personal bank accounts. Property grabbing, sexual cleansing, the breakdown of family networks, and gender-favored ownership were often mentioned in the wills as concerns of urban Zambian families suffering from HIV/AIDS. A significant number of wills written by men noted that extended family was not allowed to tamper with possessions in the event of death. No women identified property grabbing as a problem for their spouses and only one-third of the wills were completed by women.

Conclusions: The results demonstrate that property-grabbing is a prevalent issue in this population and is a threat to economic and political gender equality. This study has demonstrated the willingness of HIV positive individuals to write wills, and illustrates the concern that exists over property grabbing. However, it remains to be seen if writing wills is an effective deterrent to property grabbing: follow-up studies are required to examine the events that occur to AIDS widows whose husbands wrote wills.

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