Conference Session Summaries[1]

Prevention of Mother-to-Child HIV Transmission Internationally[1]

Data from the Joint United Nations Programme on HIV/AIDS (UNAIDS) indicate that in 2003, 34–46 million people were living with HIV infection, and three fourths of these cases were in sub-Saharan Africa. Approximately 2.1–2.9 million children were living with HIV/AIDS. HIV transmission in sub-Saharan Africa is predominately heterosexual, and by the end of 2002, women represented 58% of HIV cases. UNAIDS estimates that in many African countries <1% of pregnant women receive needed antiretroviral prophylaxis to prevent mother-to-child HIV transmission (PMTCT). This has a substantial impact on the death rate in children, with previous gains reversed for children <5 years of age in several countries.

Without intervention, the risk of mother-to-child HIV transmission is 30%–35%. With antenatal HIV testing, combination antiretroviral drugs, and safer infant feeding, the risk can be reduced to 1%–2%. Simplified short-course interventions can reduce PMTCT transmission to 15%-20%. Interventions for PMTCT should also be provided in the broader context of prevention, including primary prevention of HIV, preventing unintended pregnancies, and care and support to HIV-infected women and their families.

U.S. Government Response to Global Mother-to-Child HIV Transmission

In 2002, President George W. Bush introduced the International Mother and Child HIV Prevention Initiative. This initiative was coordinated across several U.S. government agencies including the Centers for Disease Control and Prevention (CDC) and U.S. Agency for International Development. The initiative focused on 14 countries in Africa and the Caribbean with high rates of HIV/AIDS. The goals of the initiative were to reduce mother-to-child transmission by up to 40%; support expanding national PMTCT programs; support linking PMTCT services with antiretroviral treatment and care for mothers, infants, and family members (PMTCT-plus); and reach up to 1 million women annually.

Core interventions include routinely recommending HIV counseling and testing at antenatal clinics, short-course antiretroviral prophylaxis for HIV-positive mother-infant pairs, counseling and support for safe infant feeding practices, and counseling for family planning. Additional interventions include prevention strategies for HIV-negative pregnant women and community mobilization to increase uptake and decrease stigma. By 2003, all 14 countries had started to provide services, and this initiative is now a major activity under the more comprehensive President's Emergency Plan for AIDS Relief, which targets the same 14 countries plus Vietnam.

Implementing PMTCT Programs Internationally

Case Study in Kenya

Kenya has a population of 31.1 million, with 1.2 million births every year. Of the 2.2 million people living with HIV/AIDS in Kenya, 1.4 million are women. The most rapidly growing population becoming infected with HIV is women. HIV-positive women give birth to 118,000 children annually. An estimated 35,000–40,000 of those infants are HIV-positive. Ten percent of reported HIV/AIDS cases in Kenya are in children <5 years of age. PMTCT interventions include antiretroviral drug prophylaxis, optimal obstetric care, infant feeding counseling, and family planning. Replacement feeding (as opposed to breastfeeding) is only recommended in environments where it is acceptable, feasible, sustainable, and safe. Through the CDC Global AIDS Program in Kenya, 18,000 antenatal women have learned their HIV status, and 50% of those who are HIV-positive have received prophylactic antiretroviral drugs. Barriers to testing include a lack of spousal support, fear of partner violence, and fear of disclosure and the stigma that may accompany it.

Case Study in Botswana

Botswana's 2003 surveillance data show that 37.4% of women attending antenatal clinics are HIV-positive. Botswana has had a national PMTCT program since 2001

[1]First authors are session moderators. Remaining authors are listed in order topics were discussed. More session summaries are available at http://www. cdc.gov/ncidod/EID/vol10no11/icwid.htm.

and an expanding antiretroviral treatment program since 2002. Both programs are free to patients. All pregnant women can receive HIV counseling and testing. Antiretroviral prophylaxis for women and infants and infant formula are provided for HIV-positive women. Although 95% of pregnant women attend antenatal clinics and deliver in health facilities, uptake of PMTCT has been low. A CDC-Botswana government survey of pregnant women was performed to explore factors influencing HIV test acceptance. Factors predicting acceptance included higher educational level, attendance at urban clinics, greater knowledge about PMTCT, planned pregnancy, discussing HIV testing with others, and knowing others who had received PMTCT or antiretroviral therapy.

These presentations highlight the successes of PMTCT programs as well as continuing challenges. There continues to be a need for program evaluation, operational research, and expanded PMTCT services in order to maximally prevent mother-to-child HIV transmission.

Nathan Shaffer,* Michelle McConnell,* Omotayo Bolu,* Dorothy Mbori-Ngacha,† Tracy Creek,* Ralph Ntumy,‡ and Loeto Mazhani§

*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; †Centers for Disease Control Kenya, Nairobi, Kenya; ‡Botswana Ministry of Health National PMTCT Program, Gaborone, Botswana; and §Nyangabgwe Hospital, Francistown, Botswana

Address for correspondence: Nathan Shaffer, Global AIDS Program, Centers for Disease Control and Prevention, 1600 Clifton Rd., Mailstop E04, Atlanta, GA 30333, USA; fax: 404-639-6499; email: nas4@cdc.gov

Infectious Etiologies of Chronic Diseases: Focus on Women

Infections can directly or indirectly cause chronic conditions through progressive pathology (e.g., chronic infection, inflammation, immunity, malignant transformation), sudden permanent insults (e.g., West Nile virus poliomyelitis paralysis), or by predisposing people to noninfectious sequelae (e.g., neurologic consequences of preterm birth). Bacteria, parasites, prions, viruses, and fungi may be the single or one of several factors contributing to chronic disease; one organism can cause more than one syndrome, and diverse pathogens produce similar syndromes as pathways to disease converge (1). Certain potential outcomes disproportionately affect women (e.g., autoimmune diseases), and in some settings, detection, prevention, or treatment efforts (e.g., ocular trachoma, underdiagnosed genital infections) may marginalize women. Women's activities can also increase exposures to chronic disease pathogens (e.g., schistosomiasis attributable to chores or agriculture), and gender can affect transmission (e.g., increased male-to-female transmission of human T-cell leukemia virus-1). Preventing maternal infections may further minimize chronic disease and neurodevelopmental disorders in offspring.

Are Women's Autoimmune Diseases Really Autoimmune?

Systemic and organ-specific autoimmune diseases, such as rheumatoid arthritis and myocarditis, are the leading cause of death in women >65 years of age (2). They affect 14–22 million people (5%–8% of the population) in the United States (3) and millions more worldwide. In autoimmunity, the immune system may attack or damage self-tissues with autoantibodies and autoreactive T and B cells. However, the indolent nature of most autoimmune diseases makes determining infectious triggers difficult. Animal models help to understand such links. For example, transfer of disease by autoantibodies and immune cells from affected animals indicates the immune-mediated nature of these syndromes (4–6). Toll-like receptors and the innate immune system, critical components of the normal human response to infection, are essential to naturally and experimentally induced autoimmunity. Genetic and other factors affect susceptibility to both infection and autoimmune disease. For example, coxsackievirus B3 induces viral myocarditis in susceptible mice. Certain cytokines (interleukin [IL]-1 and tumor necrosis factor [TNF]-α), but not viral replication, correlate with cardiac inflammation and can overcome resistance to chronic myocarditis (7–9). These findings suggest that, while infection may trigger autoimmunity, immune processes drive disease progression. Estrogen amplifies the immune response to coxsackievirus B3 in susceptible mice, increasing TNF-α and IL-4 levels (unpub. data), which is perhaps consistent with women's predisposition to autoimmune disease. Identifying triggers, including infection, and early markers of autoimmunity are important goals for preventing onset of or disrupting progression to autoimmune disease.

Infection Connection in Neurodevelopmental Disorders

Intrauterine infections are known causes of congenital defects worldwide. Infections during the time of fetal brain development might also contribute to neuropsychiatric disorders, including schizophrenia. Studies linking various gestational insults (including infections) and subtle premorbid behavioral alterations to adult schizophrenia implicate a neurodevelopmental origin. However, the long

latency between putative infection or insult and the emergence of psychotic symptoms complicates establishing direct links. While most reports have been ecologic studies without confirmed maternal infection, Brown et al. (10) found that 20.4% of persons with a documented in utero exposure to rubella developed an adult schizophrenia spectrum disorder. Experimentally, lymphocytic choriomeningitis virus infection in a neonatal rat model produces some latent changes similar to those of schizophrenia, e.g., hippocampal atrophy and impaired inhibitory GABA neurotransmission (11); blocking IL-1 partially attenuates the hippocampal cell loss. Inflammatory cytokine responses, perhaps amplified by immunogenetic abnormalities, may be a common thread linking intrapartum infections and noninfectious gestational and obstetric complications to neurodevelopmental disorders (12).

Keys to the Future

A continuum from acute infection to chronic disease exists, and each stage is an opportunity to prevent or minimize an avoidable fraction of chronic disease– that resulting from infectious disease. Crucial steps include identifying infectious etiologies and cofactors, determining persons (including women) at risk for infection or outcome, and implementing measures that minimize chronic sequelae. Research incorporating longitudinal studies that precede clinical disease must support evidenced-based conclusions and actions. The benefits to women could be substantial.

Siobhán O'Connor,* DeLisa Fairweather,† Brad D. Pearce,‡ and Sonja Rasmussen*

*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; †Johns Hopkins University, Baltimore, Maryland, USA; and ‡Emory University School of Medicine, Atlanta, Georgia, USA

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Address for correspondence: Siobhán O'Connor, Centers for Disease Control and Prevention, 1600 Clifton Road NE, Mailstop C12, Atlanta, GA 30333, USA; fax: 404-639-3039; email: sbo5@cdc.gov

Disproportionate Impact of Sexually Transmitted Diseases on Women

Worldwide, sexually transmitted diseases (STDs) and HIV affect women more than men. This gender differential is greater in developing countries than in industrialized countries, and biological, social, cultural, and economic factors all contribute to the gender differential in STD/HIV. Larger mucosal surface area, microlesions caused during sex (particularly forced sex), and the presence of more HIV in semen than in vaginal secretions all contribute to women's greater vulnerability to STDs and HIV.

Their sex partners' behaviors also put women at risk for STDs and HIV. Culturally, men are expected to have multiple sex partners, including sex workers, and women may risk abuse or suspicion of infidelity if they refuse sex or request protection. Financial and material dependence on men renders women economically more vulnerable to STDs and HIV. Often women are under pressure to find a husband or bring home money, which in the absence of viable alternatives leads them into sex work. Effective prevention of STDs and HIV necessitates large-scale social,

cultural, and economic changes and female-controlled prevention, such as microbicides.

Sevgi O. Aral,* Sarah Hawkes,† Ann Biddlecom,‡ and Nancy Padian§

*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; †London School of Hygiene and Tropical Medicine, London, United Kingdom; ‡Alan Guttmacher Institute, New York City, New York, USA; and §University of California at San Francisco, San Francisco, California, USA

Address for correspondence: Sevgi Aral, Division of STD Prevention, Centers for Disease Control and Prevention, 1600 Clifton Road, Mailstop E02, Atlanta, Georgia 30333, USA; fax: 404-639-8608; email: soa1@cdc.gov

Impact of HIV on Women in the United States

In the United States, AIDS was first reported in women in 1981 (1), and the percentage of AIDS cases in women has continued to increase, accounting for an estimated 26% of new AIDS diagnoses in 2002 (2). Since 1998, deaths among women with AIDS in the United States have remained stable at an estimated 4,000 (2).

Epidemiologic Features of HIV in Women, United States

Data from 29 states with confidential name-based HIV reporting since 1998 were used to describe the status of HIV disease among women from 1999 through 2002. HIV diagnoses were defined as diagnoses of HIV infection regardless of AIDS diagnosis status. This diagnosis includes persons with a diagnosis of HIV infection only, HIV infection and later AIDS diagnosis, or concurrent diagnoses of HIV infection and AIDS.

From 1999 through 2002, an estimated 101,872 HIV diagnoses were reported from 29 states: 72,007 (70.7%) in men and 29,865 (29.3%) in women. Among women, 71.9% were non-Hispanic blacks, 18.2% were non-Hispanic whites, 8.4% were Hispanics, 0.6% were American Indian/Alaska Natives, and 0.4% were Asian/Pacific Islanders. The two principal modes of HIV exposure for women were heterosexual contact and injection drug use, accounting for 77.7% and 20.5% of diagnoses among women, respectively. Women were diagnosed with HIV at younger ages than men. For the 4-year period, 31.3% of women with HIV were in the 13- to 29-year age group compared with 19.9% of men in the same age group. HIV diagnosis rates were consistently higher among non-Hispanic black women compared with women from other racial and ethnic groups for all 4 years.

Prevention Strategies for Women

In 2003, the Centers for Disease Control and Prevention (CDC) introduced the Advancing HIV Prevention (AHP) initiative (3). AHP aims to reduce barriers to early diagnosis of HIV infection, increase access to quality medical care and treatment, and provide ongoing prevention services for persons living with HIV. AHP incorporates four priority strategies: make voluntary HIV testing a routine part of medical care, implement new models for diagnosing HIV infections outside of the medical settings, prevent new infections by working with persons diagnosed with HIV and their partners, and decrease perinatal transmission.

Clinical Care of Women with HIV

HIV-infected women may be at increased risk for medical problems and metabolic changes. Studies have shown that HIV-positive women were more likely to develop genital warts and cervical intraepithelial neoplasia (4) and were at increased risk for viral infections (5). According to one study, HIV-positive women were 80% more likely to be anemic than HIV-positive men (6). Compared with HIV-negative controls, women with HIV were more likely to have elevated triglycerides and insulin levels (7) and decreased bone mineral density (8).

Determining when to initiate antiretroviral therapy for HIV-infected women is based on CD4+ T cell count (9). Because no gender difference exists for initiating or applying antiretroviral drug regimens, the guidelines for treating women are the same as those for treating men. Overall, drug efficacy does not differ by gender in randomized clinical trials.

For many reasons, women with HIV may avoid HIV testing and care. Often, women may be stigmatized and endure discrimination because of their HIV status. Women are often the primary caregivers for other family members, which may lead to avoiding or delaying testing and care. Economic dependence on a spouse or significant other may also play a role in whether a woman seeks testing and care. Mistrust of the healthcare system may also exist. Depression or domestic violence may also affect a woman's ability to seek needed care for HIV infection.

Incorporating HIV Prevention into Medical Care

In 2003, CDC, the Health Resources and Services Administration, National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America issued recommendations to assist clinicians in integrating HIV prevention into primary care for HIV-infected persons. Providers are encouraged to deliver brief prevention messages during primary care visits, screen for HIV risk behaviors and sexually transmitted disease, pro-

vide HIV behavioral risk-reduction messages, and facilitate partner notification and counseling (10).

Hazel D. Dean,* Lisa M. Lee,*
Melanie Thompson,† and Tracy Dannemiller‡

*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; †AIDS Research Consortium of Atlanta, Atlanta, Georgia, USA; and ‡Lakeland, Florida, USA

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Address for correspondence: Hazel D. Dean, Centers for Disease Control and Prevention, 1600 Clifton Road., NE, Mailstop E07, Atlanta, GA 30333, USA; fax: 404-639-8629; hdean@cdc.gov

Human Papillomavirus and Cervical Cancer

Though cervical cancer is highly curable when detected early, it remains one of the leading causes of cancer death in women worldwide. Early detection is effective because the precursor lesions evolve slowly into invasive cancer, typically over a period of >10 years. These precursor lesions (dysplasias or cervical intraepithelial neoplasias [CIN]) are detected with cervical cytology screening, the Pap smear. In every country where a Pap smear screening program has been introduced, rates of cervical cancer have been substantially reduced. The discovery that human papillomaviruses (HPV) are etiologically linked with cervical cancer has led to efforts to apply this knowledge to improve cervical cancer screening and to potentially prevent cervical cancer through vaccination.

HPV and Cervical Cancer

HPV is not a single virus but a family of closely related viruses, each designated as a type, numbered in order of discovery. Typing is based on nucleic acid sequencing. More than 100 HPV types are known to exist, and at least 30 can be detected in the anogenital tract. No simple in vitro culture methods are available for identifying it, and serologic testing is insensitive. Techniques for identifying the virus are based on nucleic acid detection, either direct hybridization or after amplification. HPV types associated with malignancies are referred to as high-risk types, and those associated with warts (condylomas) are rarely found in cancers and are called low-risk types.

Sexual transmission is the dominant mechanism for acquiring genital HPV. Infection is usually transient and not associated with symptoms. An estimated 80% of sexually active women have been exposed. Studies have detected HPV in 90% of cancers worldwide, and plausible biologic mechanisms can explain oncogenesis. The magnitude of the risk association between HPV and cervical cancer is greater than that for smoking and lung cancer. However, infection alone is insufficient to cause cancer, and additional factors are required for neoplasia.

HPV Vaccination as a Prevention Strategy

One investigational quadrivalent vaccine includes types 6, 11, 16, and 18. HPV-16 and HPV-18 (high-risk types) are found in 25% of all CIN I lesions and 70% of CIN II/III and anogenital cancers. HPV-6 and HPV-11 (low-risk types) are found in 25% of CIN I lesions and 90% of anogenital warts. Therefore a prophylactic vaccine against these four types would substantially reduce HPV-related disease.

Vaccine candidates have been evaluated in animal models of papillomavirus infection. The L1 protein of HPV is

the major capsid protein and self-assembles into viruslike particles (VLPs). Species-specific VLP vaccines provide protection against infection and disease. Protection was associated with the development of neutralizing antibodies. Serum from vaccinated animals conferred protection to unvaccinated animals.

The HPV-6, HPV-11, HPV-16, and HPV-18 L1 VLP vaccine is manufactured in *Saccharomyces cerevisiae* (yeast), and yeast-derived vaccines have been given to millions of children and adults. The vaccine includes amorphous aluminum hydroxyphosphate sulfate adjuvant and is given in a 0-, 2-, 6-month dosing scheme. Phase I trials (300 participants) were performed to establish immunogenicity and tolerability of a range of doses of monovalent HPV L1 vaccines. Phase II trials (3,500 participants) were performed to establish the immunogenicity and tolerability of a range of HPV L1 VLP vaccine dose formulations and provide preliminary proof of concept. Phase III trials (20,000 participants) will determine the efficacy of the HPV L1 VLP vaccine by using prevention of type-related CIN I, genital warts, and CIN II/III as the endpoints.

The results of the phase II trial of the HPV-16 VLP vaccine have been recently published (1). The primary endpoint of this trial in 2,392 young women was persistent HPV-16 infection (detection in consecutive visits) and HPV-16-related CIN. In 16- to 23-year-old women who were HPV-16-naïve at baseline, the vaccine was 100% effective; HPV-16 and CIN were detected in 41 unvaccinated (placebo) women and in no vaccinated women. The vaccine was generally well tolerated, and no serious vaccine-related adverse events were seen.

The phase III efficacy trial addressing women 16–-23 years is underway. Approximately 25,000 women in 33 countries and 100 sites have been enrolled. The evaluation includes Pap testing and HPV polymerase chain reaction at defined intervals. An adolescent program (for girls 9-15 years of age) is ongoing to demonstrate vaccine immunogenicity and tolerability in boys and girls. In addition, a study with Nordic Cancer Registries is planned for long-term (>10 years) follow-up postlicensure to determine duration of efficacy, long-term safety, and replacement of vaccine types with other HPVs. Phase III programs will definitively evaluate clinical and public health impact of the HPV vaccine in adolescents and adult women.

Elizabeth R. Unger* and Eliav Barr†

*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; and †Merck Research Laboratories, West Point, Pennsylvania, USA

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Address for correspondence: Elizabeth R. Unger, Centers for Disease Control and Prevention, 1600 Clifton Road NE, Mailstop G41, Atlanta, GA 30333, USA; fax: 404-639-3540; email: eunger@cdc.gov

Impact of HIV on Women Internationally

Women bear about half of the HIV infections worldwide. In sub-Saharan Africa, 58% of those infected are women; in Asia this figure is 30%. While the epidemic occurs in varied geographic regions, all women are biologically and socioculturally vulnerable.

Our common prevention options fail to take into account women's realities: being in, or wanting to be in, a union; wanting to have children; the imbalance of power in male/female relationships; inaccessibility of education; the threat of sexual violence; and the economic vulnerability that leads to engaging in sexual activity for survival. Female-controlled methods, including female condoms and microbicides, are essential and must take into account these realities. The prevention needs of women already infected with HIV must be addressed by supporting disclosure, fighting stigma, and being sensitive to the threat of violence and disinheritance.

The burden of care for those living with HIV/AIDS most often falls to women and girls. Recognition of the value of this work is vital, as is addressing practical issues that can help alleviate this burden of care.

HIV-Positive Women's Perspective, Advocacy, Sexual and Reproductive Rights

Biomedical, social, and human rights factors are compelling reasons for giving particular attention to women and HIV. However, research on women and HIV/AIDS in terms of treatment, adherence, and opportunistic infections is deficient. Women lack access to treatment, and women's representation in treatment advocacy initiatives remains wanting.

In terms of sexual and reproductive health, women face barriers in accessing treatment for sexually transmitted infections and have inadequate access to prophylactic treatments such as Pap smears and sexual health screenings. Female condoms are often unobtainable, and accelerated research on woman-controlled barriers is needed. Many programs for HIV-positive women lack services to support safe conception, frequently consider women only or primarily in terms of reproduction, and can unethically deny HIV-positive women reproductive health services.

Scientific research, programs, and initiatives should focus on HIV-positive women and their interrelation with treatment, adherence, opportunistic infections, female-

controlled prevention methods, and reproductive health. These findings must then be translated into ethical policy and practice.

HIV among Young Women in Developing Countries

Youths (persons 15–24 years of age) are a major part of the HIV epidemic around the world, making up an estimated half of new HIV infections, and young women are typically infected earlier than are men. Young women have both biological and social vulnerabilities. They can be susceptible to "sugar daddy" relationships, they are vulnerable to sex trafficking or coercion, and they have less education, including HIV prevention education, than their male counterparts. Some countries have had success in reducing HIV among young women; however, many program challenges remain: lack of evaluation, limited resources, the unique vulnerabilities of youth ignored, and the lack of influence by young persons.

Fifteen million children 15 years of age and younger have lost one or both parents to AIDS, and this situation also presents challenges, including increased risk of sexual exploitation, the loss of educational opportunities as young people are forced to leave school because they lack school funds or must work to support remaining family members, and the need for HIV prevention education that addresses orphans' special needs.

Some promising youth programs have been initiated, among them curriculum-based programs, peer education, and voluntary counseling and testing; however, more resources and evaluation must be devoted to youth programs, and these programs should view youth as assets, not as problems.

Lydia Ogden,* Jessica Ogden,† Promise Mthembu,‡ and Nancy Williamson§

*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; †International Center for Research on Women, Washington, D.C., USA; ‡International Community of Women Living with HIV/AIDS, London, United Kingdom; and §Family Health International, Arlington, Virginia, USA

Address for correspondence: Lydia Ogden, Centers for Disease Control and Prevention, 1600 Clifton Road, Mailstop D14, Atlanta, GA 30333, USA; fax: 404-639-7121; email: logden@cdc.gov

Hepatitis B in Women: Domestically and Internationally

Globally, hepatitis B virus (HBV) infection is a major cause of infectious disease-related death, causing approximately 620,000 deaths annually. Without hepatitis B vaccination, an estimated 1.4 million HBV-related deaths would occur in the 2000 birth cohort over the lifetime of the cohort. HBV infections acquired in the perinatal and early childhood periods account for 21% and 48%, respectively, of HBV-related deaths worldwide. Thus, routine vaccination of infants and children serves as the basis for a global hepatitis B prevention program.

In 1992, the World Health Organization recommended that hepatitis B vaccine be included in childhood immunization programs in all countries, but because of financial constraints, many countries were unable to initially implement this recommendation. In 1999, a global initiative began to make hepatitis B vaccine available to children living in 69 of the world's poorest countries, and by the end of 2003, routine childhood hepatitis B vaccination was included in national immunization programs in >151 countries. However, many countries, mainly in sub-Saharan Africa, have not yet introduced the vaccine, and coverage with the three-dose vaccination series remains low in many countries that have introduced the vaccine. When all countries have introduced the vaccine and coverage with the three-dose vaccination series reaches 90%, up to 84% of global HBV-related deaths will be prevented.

Hepatitis B in the United States

In the United States, an estimated 5% of the civilian, noninstitutionalized population has serologic evidence of past or present HBV infection, and 0.4%-0.5% have chronic infection and are the primary source of infection for others. From 1990 through 2002, the incidence of reported acute hepatitis B declined 67%. The incidence of acute hepatitis B among men has been consistently higher than among women. In 1990, the incidence among men and women was 9.8 and 6.3 per 100,000, respectively; in 2002, the incidence was 3.7 and 2.2 per 100,000, respectively. Overall, incidence among women has declined more than among men. Trends in acute hepatitis B reflect poor vaccination coverage among persons who engage in high-risk behavior.

Persons at high risk for HBV infection often seek health care in settings in which vaccination services could be provided. During 1996–1998, approximately half of persons with reported acute hepatitis B previously had been treated for a sexually transmitted disease (STD) or incarcerated: 89% of injection drug users, 35% of men who have sex

with men, and 70% of persons with multiple sex partners with reported acute hepatitis B had been previously incarcerated or treated for an STD. Both STD clinics and correctional facilities are settings in which hepatitis B vaccination services are recommended.

Programmatic Success in High Risk Settings

In August 1999, Denver Public Health (DPH) began offering hepatitis B vaccine to adults at high risk in the public STD clinic. Initial funding for the vaccine was first allocated by the Denver City Council. Patients were asked if they had a history of hepatitis B vaccination or disease and questioned about risk behavior; no serologic screening was done. The selective vaccination process was cumbersome, and clinicians required frequent reminders to implement it. Of clients seen in the STD clinic, 58% accepted the vaccine and were directed to receive it in the immunization clinic in the same building. Of clients who agreed to the free vaccine, 29% left before receiving it. Procedures changed when additional funding was secured in January 2002. Client selection was discontinued, and all clients of the STD and HIV Counseling and Testing clinics were offered vaccine, which increased its initial acceptance to 77%. Vaccination rates were further improved by having personnel available to vaccinate clients on site, before they left the clinic.

DPH used a vaccine registry, adapted from one implemented to track pediatric vaccinations, to assess clients' vaccination status before doses were given. The results indicated that clients were not differentiating between vaccinations and various other tests or medications in self-reporting of immunization status. Use of the vaccine registry was crucial for evaluating completion rates and eliminating revaccination of persons already immunized.

A highly successful hepatitis B vaccination program can be established within another public health infrastructure. The process requires commitment from all involved programs because changes in service delivery are needed to accommodate vaccination. The largest issue confronting programs is continued funding for vaccine.

Cindy Weinbaum,* Susan Goldstein,* and Julie Subiadur†

*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; and †Denver Public Health Department, Denver, Colorado, USA

Address for correspondence: Cindy Weinbaum, Centers for Disease Control and Prevention, 1600 Clifton Road., Mailstop G37, Atlanta, GA 30033, USA; fax: 404-371-5488; email: cweinbaum@cdc.gov

Refugees, Forced Displacement, and War

Women make up high proportions of refugee and internally displaced populations, and they suffer unique consequences of war and conflict because of gender-based violence, discrimination, and caretaking roles. Refugee women are especially vulnerable to infectious disease, as well as threats to their mental health and physical safety.

Infectious Causes of Maternal Death in Refugee Populations in Afghanistan

The Reproductive Age Mortality Survey (RAMOS) in Afghanistan consisted of death identification followed by death investigation. The study identified 357 deaths of women of reproductive age (15–49 years) among residents of 16,000 Afghani households and investigated 80% of these deaths through the verbal autopsy method. The maternal death rate is extremely high (1,600–2,200 deaths per 100,000 live births) in Afghanistan as a whole, and the estimate in one study site was the highest ever recorded (6,500/100,000 live births in Ragh, Badakshan). The vast majority of maternal deaths were attributed to direct obstetric causes. Infectious causes, primarily tuberculosis, malaria, and postpartum sepsis, accounted for 12% of deaths. Tetanus, tuberculosis, and malaria often claimed women's lives while they were pregnant.

Women faced substantial barriers to care, and very few accessed preventive or curative services. In a country of very low resources and conflict such as Afghanistan, policy development and program implementation to reduce maternal deaths are challenging. Causes of maternal death are multifactorial and cannot be resolved simply by increasing the percentage of deliveries by skilled birth attendants. Infectious causes of death identified in this study illustrate the need for comprehensive maternity care, including preconceptional, prenatal, and postnatal care, integrated with other reproductive health and primary care services.

Impact of War on Women's Health: Refugees from Liberia and Sierra Leone in Nigeria

A study carried out between January and March 2004 with Liberian refugee women residing in the United Nations refugee camp at Oru village in Ogun State, Nigeria, shows how forced migration contributes to increased incidence of both communicable and noncommunicable diseases in women. Liberia's civil war resulted in approximately 215,000 refugees at the end of 2001; 50% to 80% of these refugees were women. During the civil war, an estimated 40% of all Liberian women were raped. Loss of family forces women to depend on men and may lead to rape, forced marriage, prostitution, domestic

abuse, and increasing risk of HIV and other sexually transmitted infections. Lack of postwar shelter compounds other problems and increases exposure to mosquitoborne diseases. Lack of clean drinking water introduces risks of bacillary dysentery, cholera, diarrheal disease, typhoid, hepatitis A, and other diseases.

Researchers concluded that solutions to the negative impact of war on women's health should be based in education, empowerment, efficient publicity, and effective policies. A sub-ministry devoted to women's affairs and maternal and child health was recommended, with funding specifically earmarked for women's health. Regular screening for preventable or treatable disease should be done in the home country and continued after the safety period ends.

Violations of International Women's Rights: Effects on the Overall Health of Women

Findings from a study by Physicians for Human Rights indicate that nearly half of all households in three southern cities in Iraq experienced human rights abuses among household members between 1991 and 2003. Such abuses represent considerable challenges for justice and accountability and emphasize the need to address individual and community mental health needs on a large scale. The prevalence of mental illness represents a challenge to the Iraqi health system, since <100 psychiatrists are reported to practice in the country, and therapeutic medications and social support systems are lacking.

Households surveyed expressed support for a government that would protect and promote human rights, including the rights of women. However, the lack of support for certain women's rights by both men and women may make the full range of women's human rights difficult to achieve. Consequently, restrictions on women's rights or ineffective representation of women may have substantial, adverse health consequences for women and girls. This study suggests the need for a gender- and rights-based approach for reconstruction and community health and development in Iraq.

Trude Bennett,* Linda Bartlett,† Oluwasayo Adewumi Olatunde,‡ and Lynn Amowitz§

*University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA; †Centers for Disease Control and Prevention, Atlanta, Georgia, USA; ‡University of British Columbia, Vancouver, British Columbia, Canada; and §Physicians for Human Rights, Boston, Massachusetts, USA

Address for correspondence: Trude Bennett, Department of Maternal and Child Health, University of North Carolina at Chapel Hill, CB# 7445, 401 Rosenau Hall, Chapel Hill, NC 27599-7445; fax: 919-966-0458; email: trude_bennett@unc.edu

Prevention of Hepatitis C in Women

Hepatitis C is a major public health problem in the United States. Although the incidence of new infections declined substantially in the past decade, approximately 25,000 persons are infected each year. In total, an estimated 2.7 million Americans have chronic hepatitis C virus (HCV) infection and are at risk for HCV-related chronic liver disease and hepatocellular carcinoma (HCC).

The most common exposure associated with HCV infection is use of injection drugs. Other less commonly identified risk factors include sexual contact; transfusions before blood screening was implemented; and occupational, nosocomial, and perinatal exposures. Although sources of HCV infection are the same for men and women, the overall prevalence of HCV infection is lower among women than men, which is likely related to the lower prevalence of injection-drug use among women.

The risk for HCV transmission from mother to infant is about 5%–6%; transmission occurs only from women who are HCV RNA positive and is higher among those coinfected with HIV (≈18.7%) than among women not infected with HIV (≈5.4%). The influence of factors such as maternal viral titer and interventions at the time of delivery is unclear. Studies indicate that breastfeeding is not a risk factor for perinatal transmission.

Most hepatitis C prevention strategies are gender neutral and include screening and testing donors of blood, plasma, organ, tissue, and semen; virus inactivation of plasma-derived products; effective infection control practices; identification, counseling, and testing of at-risk persons; and medical management of infected persons. Pregnant women with risk factors for infection should be identified, screened, and counseled regarding the risk for perinatal transmission.

Clinical Reports

Although risk factors for HCV acquisition are similar among men and women, women are at higher risk of acquiring HCV from sexual contact with an HCV-infected partner and more likely to be initiated into drug use, share needles, or be injected by a sexual partner. Among HCV-infected women, pregnancy may lead to worsening of histologic disease. Other gender differences in the natural history of hepatitis C are that the rate of spontaneous HCV clearance may be higher among women than men, the risk for fibrosis progression and HCC are lower in women than men, and alcohol use by women with hepatitis C is likely to have more pronounced negative effects on the liver than is observed among HCV-infected men. There do not appear to be substantial gender differences in response to currently available therapy.

International Perspective

Approximately 2.2% of the world's population, 130 million people, are infected with HCV. Worldwide, an estimated 325,000 deaths from HCV-attributable HCC and cirrhosis occur annually. In industrialized countries, most HCV-infected persons have prevalent, chronic infections, attributable to past exposures such as injection drug use, blood transfusions, and sexual contact. Primary prevention strategies include reducing harm and preventing nosocomial transmission. In developing countries, many incident, new infections are due to health care-related exposures such as unsafe injections, and prevention strategies focus on safe health care as well as reducing harm.

Beth P. Bell,* Eric E. Mast,* Norah Terrault,† and Yvan J.F. Hutin‡

*Centers for Disease Control and Prevention, Atlanta, Georgia, USA; †University of California at San Francisco, San Francisco, California, USA; and ‡World Health Organization, Geneva, Switzerland

Address for correspondence: Beth P. Bell, Chief, Epidemiology Branch, Division of Viral Hepatitis, Centers for Disease Control and Prevention, 1600 Clifton Rd. NE, Atlanta, GA 30333, USA; fax: 404-371-5221; email: bbell@cdc.gov