

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

Audio tapes of all sessions are available for purchase from Conference Archives, 239 Main Street, Suite 300, Johnstown, Pennsylvania 15901; telephone: 866-316-3289 or at <http://www.conferencearchives.com/cgi-bin/caistore/CDR040207.html>

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 Subiadurt†**

*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

Audio tapes of all sessions are available for purchase from Conference Archives, 239 Main Street, Suite 300, Johnstown, Pennsylvania 15901; telephone: 866-316-3289 or at <http://www.conferencearchives.com/cgi-bin/caistore/CDR040207.html>

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 pre-conceptional, 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