

## Review

## Preconception Health Care for HIV-infected Women

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*The advent of potent antiretroviral therapy coupled with the dramatic reduction in mother-to-child transmission seen over the past decade has allowed women with HIV infection to live longer, healthier lives and has affected their fertility desires. As a result, preconception health care for HIV-infected women should be a routine part of primary health care. Such counseling includes health recommendations and counseling for safer sexual practices, contraception, and pregnancy planning, identifies individual risks and corresponding interventions, provides personalized and nonjudgmental education, and provides access to integrated services that address all of a woman's health and psychological needs. The goals are: (1) to improve the health of the woman before conception; (2) to identify risk factors for adverse maternal or fetal outcomes and initiate interventions to optimize outcomes; and (3) to prevent transmission of HIV to infants as well as sexual partners. This article will review the components of preconception health care for HIV-infected women.*

Care for women with HIV infection has specific challenges before conception and during pregnancy that should be addressed in a comprehensive, standardized plan of care. Preconception care for HIV-infected women includes health recommendations and counseling for safer sexual practices, contraception, and pregnancy planning. The goals are: (1) to improve the health of the woman before conception; (2) to identify risk factors for adverse maternal or fetal outcomes and initiate interventions to optimize outcomes; and (3) to prevent transmission of HIV to infants as well as sexual partners. Preconception care is not a single clinical visit, but rather ongoing care that is integrated into primary care to address the needs of women with HIV infection during the different stages of reproductive life.<sup>1</sup> This article will review the components of preconception health care for HIV-infected women, emphasizing a process of ongoing care throughout the reproductive years.

### Background

The advent of potent antiretroviral therapy coupled with advances in the

understanding and treatment of HIV infection has improved the life expectancy for women with HIV infection. Similarly, the use of antiretroviral drugs during pregnancy has resulted in a dramatic reduction in mother-to-child transmission of HIV.<sup>2</sup> As HIV-infected women live longer and healthier lives, many express fertility desires and choose to become pregnant, and others face unintended pregnancies. Studies have estimated that 70% of HIV-infected women are sexually active<sup>3</sup> and 25% to 30% of HIV-infected women receiving medical care in North America express desires to have children.<sup>4,5</sup> Because one-half of all pregnancies in the United States are unintended,<sup>6</sup> preconception care must be initiated before patients express fertility desires in order to be effective. Clinicians should routinely discuss fertility desires as part of comprehensive primary care services for HIV-infected women.

It is crucial that a new model of health care be implemented that incorporates preconception care across the reproductive lifespan. This model should address the realities of living with HIV infection, such as its implica-

tions for reproductive health, fetal well being, and the prevention of transmission to infants and sexual partners. This model should be based on an expanded view of preconception health care, one that encompasses primary care, recommendations for safer sexual practices, contraception, and pregnancy planning, as well as one that calls for the collaboration of multidisciplinary health care providers.

### Components of Preconception Health Care for HIV-infected Women

The Centers for Disease Control and Prevention (CDC), the American College of Obstetrics and Gynecology (ACOG), and other national organizations recommend offering all women of childbearing age the opportunity to receive preconception counseling and care as a component of routine primary medical care.<sup>7,8</sup> The purpose of such care is to improve the health of every woman before conception by: (1) providing education and counseling targeted to the individual's needs; (2) identifying risk factors for adverse maternal or fetal outcomes; and (3) initiating interventions to optimize outcomes. The fundamental principles of preconception counseling and care have been outlined recently in a report by the CDC and the Agency for Toxic Substances and Disease Registry (ATSDR) Preconception Care Work Group.<sup>7</sup> Preconception care involves more than a single clinical visit; it is a process of ongoing care and interventions integrated into primary care that addresses the needs of women during the different stages of reproductive life.

In addition to the general components of preconception counseling and

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care that are appropriate for all women of reproductive age, HIV-infected women have specific needs that must be addressed by their primary care providers. Components of this HIV-specific preconception care have been outlined by the United States Public Health Service (USPHS) Perinatal HIV Guidelines Working Group.<sup>1</sup> Guidelines for integrating preconception care and HIV testing into a comprehensive reproductive health care model are shown in Table 1.

Assessing the need and options for family planning, implementation and follow-up of family planning and safer sex strategies, as well as preconception counseling, are routine components of primary health care for women with HIV infection.

### Contraception and Preventing Transmission of HIV and Other Sexually Transmitted Infections

HIV-infected women should use safe and reliable means of contraception until ready to conceive. A clinician's recommendations regarding contraceptive options for HIV-infected women need to take into account the convenience and safety of the method, efficacy in preventing pregnancy, prevention of transmission of HIV and other sexually transmitted infections (STIs), and potential interactions with antiretroviral drugs and other medications. For a review of contraceptive methods for HIV-infected women, consult the March 2005 issue of the International Planned Parenthood Federation *IPPF Medical Bulletin*.<sup>9</sup>

It is important to counsel HIV-infected women on the efficacy of barrier protection methods for decreasing the transmission of HIV and other STIs, and for providing protection from acquiring more virulent or drug-resistant HIV strains. There is strong evidence that male condom use reduces the risk of transmission of HIV, gonorrhea, chlamydia, and herpes simplex virus.<sup>10-12</sup> Experts estimate that consistent use of male condoms decreases the risk of HIV transmission by approximately 80% to 90%.<sup>13</sup> It must be considered, however, that condom use is associated with relatively higher pregnancy rates

**Table 1. Steps for Integrating Preconception Care and HIV Testing into a Comprehensive Reproductive Health Care Model**

- Provide continuous preconception counseling for women of reproductive age: ask about pregnancy intentions **every woman, every visit.**
- Provide family planning services integrated in HIV clinics.
- Provide rapid HIV testing of patients and their partners in obstetrics and gynecology and HIV clinics.
- Provide preconception education, evaluation, and risk assessment prior to pregnancy attempts.
- Provide integrated obstetrics and HIV services for HIV-infected pregnant women.
- Provide on-site case management, peer educators, and psychological services integrated into prenatal care.
- Provide state-of-the-art medical care to every woman.
- Provide rapid HIV testing in hospital delivery rooms for all unregistered or untested pregnant women.
- Provide linkages to HIV care for HIV-infected women and children by collaborating with pediatric services and family-centered clinics.

Adapted from the Perinatal HIV Guidelines Working Group, 2006.

than hormonal contraceptive methods or the intrauterine device (IUD).<sup>14</sup> With regard to female condoms, although research is more limited, there is some evidence that they provide effective protection against STIs in women.<sup>15</sup> Unfortunately, female condoms are not well known or their use is considered awkward by many women. Nevertheless, women who receive instruction in female condom use and have the opportunity to practice application and removal techniques on a pelvic model have an increased likelihood of using the method successfully and of viewing it favorably.<sup>16</sup>

The use of dual-protection contraception methods—hormonal contraception or IUD to prevent pregnancy and a barrier method to prevent HIV and other STIs—is ideal. However, research on the use of dual-protection methods is limited, and conclusions on promoting single methods versus dual methods are mixed. Clinicians need to tailor their contraception-counseling messages to respond to an individual woman's desires and motivations. Offering clear, positive, and reinforcing messages to women about the dual benefits of consistent condom usage,

and providing an array of contraceptive choices, may decrease the likelihood of HIV and STI transmission and unplanned pregnancy.<sup>17</sup>

### Preconception Education and Risk Assessment

It is advantageous for clinicians to counsel women about the importance of eliminating alcohol and substance use and about smoking cessation during preconception in order to prevent complications that can occur during pregnancy. Smoking during pregnancy is associated with several adverse outcomes including low-birth-weight, small-for-gestational-age neonates, placental abruption, premature rupture of membranes, an increase in sudden infant death syndrome, and neonatal respiratory problems.<sup>18</sup> Alcohol use by pregnant women is associated with fetal alcohol syndrome and fetal alcohol effects.<sup>19</sup> Cocaine use during pregnancy is associated with premature delivery, placental abruption, in utero fetal stroke, maternal stroke, and low-birth-weight neonates.<sup>20</sup> Hence, preconception referral to drug and alcohol counseling and rehabilitation services is advisable.

Preconception is also the time to optimize an HIV-infected woman's nutritional status. In particular, the initiation of preconception folic acid supplementation is highly effective in decreasing the occurrence of fetal neural tube defects (NTDs) both in low-risk women and in high-risk women who have had a previous pregnancy resulting in a neonate with a NTD.<sup>21</sup> Current practice recommends prenatal supplementation with 400 µg of folic acid daily for low-risk women of reproductive age.<sup>22</sup> For high-risk women, supplementation with 4 mg per day, started at least 1 month before conception and continued through the first trimester is recommended.<sup>23</sup>

Accurate reproductive, genetic, and psychiatric histories are essential components of preconception health care. They are particularly important for HIV-infected women, who often have psychiatric comorbidities, especially depression disorders.<sup>24</sup> We recommend screening all HIV-infected women with a simple screening test for depression, such as the Center for Epidemiologic Studies-Depression Scale or the Beck Depression Inventory, and referring those who test positive for formal psychological evaluation.

Preconception screening for infectious diseases should include HIV-1 genotype before starting antiretroviral therapy, as well as screening for varicella, rubella, rubeola, mumps, cytomegalovirus, toxoplasmosis, hepatitis B and C virus titers, and tuberculosis (TB). If appropriate, evaluation for prophylaxis for opportunistic infections and administration of vaccines for influenza, pneumococcal infections, and hepatitis A and B viruses should occur before pregnancy as well. Additionally, both partners should be screened for genitourinary tract infections and treated if indicated.

In addition to maintaining optimal HIV management, clinicians should attain medical control of other chronic illnesses such as diabetes, hypertension, or lupus in HIV-infected women before pregnancy is attempted. The risks and effects of pregnancy on each medical condition, and the effects of the medical condition on pregnancy outcomes,

should be explained so that the patient can make an informed decision about becoming pregnant. For complicated cases, it may be prudent to have the patient seen by a maternal fetal medicine specialist, who can provide detailed information about pregnancy and coexisting medical conditions.

### Pregnancy and HIV Infection

Education and counseling for HIV-infected women about perinatal HIV transmission risks, strategies to reduce those risks, the potential effects of HIV or its treatment on pregnancy, and the risk of transmission during breastfeeding, allows patients to be fully aware of the issues concerning HIV infection and pregnancy before conception. The use of potent antiretroviral therapy has reduced the risk of mother-to-child transmission to 1% to 2% when HIV infection is optimally managed,<sup>25</sup> and pregnancy has not been shown to have an adverse effect on the course of HIV disease.<sup>26</sup> Likewise, HIV infection and its treatment have not been demonstrated to adversely affect pregnancy outcomes, and overall, the benefits of antiretroviral therapy outweigh its risks.<sup>27</sup>

When pregnancy is desired by a woman who is maintained on antiretroviral therapy, a stable, maximally suppressed maternal HIV-1 RNA level before conception is necessary. If the woman does not meet the recommendations for antiretroviral therapy as indicated by the USPHS guidelines, therapy can be initiated in the second trimester of pregnancy, when organogenesis is complete, to prevent mother-to-child transmission.<sup>1</sup> When prescribing antiretroviral therapy for women of childbearing age, it is important to choose agents known to be effective in reducing the risk of perinatal HIV transmission and to avoid those with known teratogenicity. (For more information refer to the United States Department of Health and Human Services [DHHS] perinatal guidelines available at <http://www.aidsinfo.nih.gov/guidelines>.) Women of childbearing potential should avoid regimens that include efavirenz, owing to con-

cerns of teratogenicity that are based on animal studies and several case reports in humans describing NTDs in fetuses exposed to efavirenz in the first trimester.<sup>1, 28, 29</sup> Of the medications that have been adequately studied, with the exception of efavirenz, adverse pregnancy outcomes (preterm birth, low birth weight, and intrauterine growth retardation) and congenital abnormalities in antiretroviral-treated women are similar to those reported in uninfected women.<sup>1, 30, 31</sup> Therapy-associated adverse effects that may affect maternal-fetal health outcomes such as hyperglycemia, anemia, and hepatotoxicity should be reviewed. Short-term and potential long-term neonatal toxicities should be discussed.

Disclosure of HIV status to partners before pregnancy should be encouraged, but for some HIV-infected women, disclosure can be very unsettling. Fear of rejection, stigmatization, or domestic violence, and a history of childhood sexual abuse can be reasons behind a woman's reluctance to disclose her HIV status to a partner. Providing support through accessible psychological services can help women through this very sensitive process. Following disclosure, offering on-site rapid HIV testing of a partner and an infected woman's untested children can expedite the detection of their HIV status and, if necessary, their linkage to immediate care.

When all preconception issues have been identified and addressed and the patient is physically and emotionally prepared for pregnancy, the couple must have a plan for conceiving that minimizes the risk of transmission to the uninfected partner. Before any attempts at conception, the man should obtain a semen analysis to exclude azospermia and symptomatic epididymitis.

Interventions in planned pregnancies between serodiscordant couples using assisted reproduction methods can minimize the risk of HIV transmission to the uninfected partner. For serodiscordant heterosexual couples in which the woman is HIV-infected and the man is HIV seronegative, low-cost self-insemination techniques—such as using a needleless syringe or a diaphragm to

insert semen close to the cervix—are recommended. Timing these options to occur during ovulation can be calculated by using the simple and effective Spinbarkeit test: observing when the cervical mucous changes from a thick consistency to a thin, stretchy consistency. Alternatively, over-the-counter ovulation-prediction kits that detect the pre-ovulation surge of luteinizing hormone, or monitoring basal-body temperatures can also estimate the timing of ovulation. Information about these methods should be included as part of preconception counseling for couples interested in pregnancy. For a presentation that can be provided as patient information for serodiscordant couples, see “Thinking About Having a Baby? Preconception Counseling for HIV Discordant Couples” available at <http://www.womenchildrenhiv.org/>.

The successful use of timed conception with no unprotected intercourse outside of conception has been reported. The 4 cases of HIV transmission that occurred in this report resulted from exposure outside of conception attempts: 2 women seroconverted in their seventh month of pregnancy, and 2 seroconverted postpartum.<sup>32</sup>

It is the clinician’s responsibility to counsel the couple about the risks of attempting conception through unprotected intercourse. If, despite counseling, the couple decides to attempt pregnancy through unprotected intercourse, a discussion informing them that attaining an undetectable HIV RNA level through adherence to antiretroviral therapy before conception attempts has been shown to lower the risk of transmission is prudent.<sup>33</sup> In addition, it is important that couples are counseled to use condoms during all sexual encounters other than conception attempts during ovulation. In most cases, however, serodiscordant couples should be discouraged from conceiving naturally through unprotected intercourse owing to the cumulative risk of HIV transmission to the uninfected partner.<sup>34</sup>

When both partners are HIV seropositive, unprotected intercourse can increase the risk of transmitting new viral strains. However, a variety of as-

sisted reproduction techniques can mitigate this risk.<sup>35</sup> Those most commonly used include sperm preparation techniques such as sperm washing, column purification, and intracytoplasmic sperm injection. Sperm washing has shown substantial success in pregnancy outcomes with no HIV transmission to women.<sup>36,37</sup> Unfortunately, access to assisted reproduction techniques is limited and costly.<sup>35</sup>

### Effective Models of Care for HIV-infected Women

Health care models that emphasize collaboration between clinicians and agencies providing care and services to HIV-infected women of childbearing age have demonstrated effectiveness in improving health outcomes and reducing perinatal HIV transmission.<sup>38</sup> “One-stop-shopping” models of care provide primary health care, HIV specialist care, gynecology, prenatal care, nutrition services, pharmacy, case management, peer educator support, psychological services, and the provision of pediatric health care services and child day care in one location.<sup>39</sup> Over the past 5 years, this integrated-services model has enabled the Partnership Comprehensive Care Practice of Drexel University College of Medicine to achieve a 0% mother-to-child transmission rate among more than 130 pregnant women treated for HIV infection.

In addition, at our facility, the integration of a Title X Family Planning Program into an existing HIV clinic offers patients counseling and treatment for birth control, STIs, education about transmission of HIV, pregnancy options counseling, preconception counseling, and HIV testing for partners.

### Conclusion

The advent of potent antiretroviral therapy has allowed women with HIV to live longer and healthier lives. This circumstance coupled with the dramatic reduction in mother-to-child transmission seen over the past decade has changed the quality of life for HIV-infected women. It is crucial that a

new strategic plan for HIV prevention and a proactive approach to reproductive health care be implemented by health care providers who care for these women. Preconception counseling for HIV-infected women should be a routine part of primary health care. Such counseling identifies individual risks and corresponding interventions, provides personalized and nonjudgmental education so that a woman is fully informed of her choices, and provides access to integrated services that address all of a woman’s health and psychological needs. Collaborative partnerships between family planning, obstetrics and gynecology, pediatric, and HIV and AIDS services as part of an integrated system of care will likely improve our ability to provide high-quality care and be more responsive to the needs of HIV-infected women. Primary care providers for HIV-infected women have numerous opportunities to provide preconception care prior to pregnancy attempts. “Every woman, every visit” is a reminder to provide preconception health care as a routine component of primary care.

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