

Conceptive Options for People Living with HIV

Surasith Chaithongwongwatthana MD*

* Department of Obstetrics and Gynecology, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Seroconcordant and serodiscordant couples living with HIV should be counseled and informed regarding reproductive health issues, including contraceptive options. Assisted conception, sperm washing, timed intercourse, and vaginal self-insemination are options to be considered by HIV-affected couples who wish to conceive with a lowered risk of viral transmission. Pre-exposure prophylaxis may be an adjunctive method to reduce the risk, particularly among serodiscordant couples.

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There are more than 400,000 Thai people living with HIV and the majority of them are in the reproductive age range⁽¹⁾. Appropriate reproductive health counseling and care, particularly family planning services, should be integrated into HIV patient management. Components of this care include contraceptive services to prevent unintended pregnancy and pre-conceptive counseling and care. An emphasis on female health before pregnancy may reduce the risk of pregnancy-related complications and antiretroviral treatments, as well as lowering viral load, and contribute to the prevention of mother-to-child HIV transmission⁽²⁾. Serodiscordant and seroconcordant couples who would like to conceive should be evaluated and counseled regarding fertility options and the related risks of each option.

Conceptive options for couples with HIV

Because of the risk of HIV transmission in serodiscordant couples and the risk of transmission of drug-resistant viruses in seroconcordant couples, the consistent use of a condom when having sexual intercourse is recommended. Timed intercourse or assisted conception methods may be the best choice for couples who want to conceive. It is recommended that couples be checked for infertility problems prior to being informed about conception options. In infertility scenarios caused by disorders, such as oligospermia

(a sperm count of less than 20×10^6 cells/mL) or bilateral tubal occlusion, in vitro fertilization (IVF) will be the only available option.

Couples without infertility problems should be informed about the available options (Table 1) for getting pregnant with a diminished risk of viral transmission. Both male and female partners should be screened and treated for other sexually transmitted infections to reduce viral load in the genital tracts. HIV-infected partners should be treated with antiretroviral drugs and have an undetectable viral load for at least 6 months before trying to conceive. Prevention of mother-

Table 1. Options for conception among couples living with HIV

Male	Female	Options
Seronegative	HIV-infected	1. Vaginal self-insemination 2. Assisted conception 3. Timed intercourse ^{a,b,c}
HIV-infected	Seronegative	1. Assisted conception using donor sperm 2. Sperm washing and assisted conception 3. Timed intercourse ^{a,b}
HIV-infected	HIV-infected	1. Sperm washing and assisted conception 2. Vaginal self-insemination ^a 3. Timed intercourse ^a

^a The infected partner must have an undetectable viral load for at least 6 months

^b Pre-exposure prophylaxis may be used as an adjunctive measure to reduce risk of transmission

^c Male circumcision may be used as an adjunctive measure to reduce risk of transmission

Correspondence to:

Chaithongwongwatthana S, Department of Obstetrics and Gynecology, Faculty of Medicine, Chulalongkorn University, Rama IV Road, Bangkok 10330, Thailand.

Phone: 0-2256-4241

E-mail: iamsurasith@gmail.com

to-child transmission has to be emphasized when HIV-infected women get pregnant.

Vaginal self-insemination

By using this method, the seronegative male partner can avoid contamination exposure from vaginal secretions, thereby preventing HIV infection. The procedure must be performed on the day of ovulation to increase the chance of pregnancy. After the male partner ejaculates semen into a clean cup, a small syringe (3-5 mL) will be used for insemination. With the female partner in the supine position, the semen-filled syringe is gently inserted into the vagina and the semen is then injected into the vagina. The female partner should remain in the supine position for approximately 30 minutes after insemination⁽³⁾.

Determining ovulation date

Predicting the day of ovulation can be performed by simple counting, but this method is only effective in women with regular menstruation that takes place at known intervals. Normally, ovulation occurs about 14 days before the first day of the next menstruation. Adjunctive methods for determining the ovulatory period include measurement of body temperature in the morning (temperature will rise 0.5-1 degree Celsius after ovulation) and the observation of clear mucus vaginal discharge.

A more accurate method of predicting ovulation involves the use of over-the-counter test kits that detect luteinizing hormone (LH) in the urine. LH is usually secreted in small amounts during the menstrual cycle, but LH levels suddenly increase for a few days (LH surge) around the middle of the cycle. Ovulation occurs approximately 24-36 hours after the LH surge.

Assisted conception

In a couple where the male partner has a normal sperm count and the female partner has no tubal occlusion in either fallopian tube, intrauterine insemination (IUI) can be used for assisted conception. IUI will be performed on the day of ovulation; a process facilitated by ultrasound examination and the injection of human chorionic gonadotropin (hCG) to stimulate ovulation.

In couples with infertility problems or who fail to get pregnant after 3-6 IUI cycles, the use assisted reproductive technology, such as in vitro fertilization (IVF), will likely be required. An ICSI (intracytoplasmic sperm injection) may be used to increase pregnancy

rates in IVF cycles, especially for men who have a low sperm count.

Sperm washing

In assisted conceptive procedures like IUI or IVF, sperm washing is required for the selection of motile spermatozoa. Spermatozoa do not have receptors for HIV. As such, sperm washing facilitates the separation of sperm from seminal fluid and white blood cells, both of which harbor HIV. In serodiscordant couples in which the male partner is HIV-infected, 3-step sperm washing, including density gradient centrifugation, washing, and sperm swim-up, is recommended⁽⁴⁾.

Semprini et al, the developers of the 3-step sperm washing technique, retrospectively analyzed data of 635 serodiscordant couples (HIV-positive male with seronegative female) in a sperm washing and IUI program based at the San Paolo University Hospital and the Studio Semprini Clinic, Milan, Italy from 1989 to 2005⁽⁴⁾. IUI performed on the women ranged from 1 to 17 cycles and 91 cases (14%) required assisted reproductive technology. No data were available on 48 women, leaving 587 cases for analysis. Two hundred thirty-eight live births (40.5% per women) were reported. No seroconversion in the women was found. The upper 95% confidence limit of the HIV transmission rate was 1.8 per 1,000 cycles.

The Thai Red Cross AIDS Research Centre, Bangkok, Thailand provided assisted conceptive services for serodiscordant couples (HIV-positive male with seronegative female) from 2006 to 2010. Sperm washing and IUI were used for assisted conception in 119 couples. There were 17 live births (14.3%) and no seroconversion was reported.

A recent meta-analysis of 24 studies to assess procreative outcomes for HIV-positive males and females with seronegative partners undergoing IUI or IVF was reported⁽⁵⁾. No HIV transmission was observed in 8,212 IUI and 1,254 IVF cycles, resulting in 95% confidence that the transmission rate is 0.45 per 1,000 cycles or less.

Timed natural conception

An option for achieving pregnancy in couples where the infected partner has an undetectable viral load and there is no access to assisted reproductive services involves having sexual intercourse without a condom on the day of ovulation. In couples where the male partner is seronegative, male circumcision with a surgical wound healed for at least 6 weeks before having unprotected sex may reduce the risk of HIV

infection⁽⁶⁾. Antiretroviral pre-exposure prophylaxis treatment for the seronegative partner would be useful in further reducing the risk of transmission.

Pre-exposure prophylaxis (PrEP)

Serodiscordant couples who choose timed intercourse as a method to conceive increase the risk of HIV transmission to the uninfected partner. The use of antiretroviral drugs for pre-exposure prophylaxis (PrEP) in seronegative partners before sexual intercourse may lessen the risk. Before initiating PrEP, an explanation regarding potential risks and benefits of the treatment should be provided and renal function and hepatitis B infection status should be checked⁽⁷⁾.

Tenofovir (TDF), 300 mg tablet at both 36 hours and 12 hours before having intercourse at the expected time of ovulation, has been reported as being effective in the prevention of infection in seronegative women⁽⁸⁾. However, for the highest degree of transmission prevention, 1 tablet emtricitabine/tenofovir (FTC 200 mg/TDF 300 mg) taken every 24 hours, beginning on the first day of menstruation, is recommended⁽⁹⁾. In couples where the female partner is not infected, discontinuation of the drugs is recommended when pregnancy is detected. In couples where the male partner is seronegative, a continuation of the drugs for 28 days after the last exposure is recommended⁽⁷⁾.

People living with HIV desire to have children, similar to people in the general population. With antiretroviral treatments, people affected by HIV can enjoy an increased life expectancy and a better quality of life. Similar to the medical advancements made in the prevention of mother-to-child HIV transmission, many couples living with HIV infection are now able to explore safer and more viable ways to safely conceive children of their own. Health care providers should deliver clear and accurate information regarding fertility options to these couples and support their informed reproductive choice decisions.

Potential conflicts of interest

None.

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ทางเลือกในการมีบุตรสำหรับผู้ติดเชื้อเอชไอวี

สุรสิทธิ์ ชัยทองวงศ์วัฒนา

คู่สามีภรรยาที่มีฝ่ายใดฝ่ายหนึ่งหรือทั้งคู่มีการติดเชื้อเอชไอวี ควรจะได้รับคำปรึกษาและให้ข้อมูลที่เหมาะสมเกี่ยวกับอนามัยการเจริญพันธุ์ รวมทั้งทางเลือกต่างๆ ในการมีบุตร การช่วยการเจริญพันธุ์ การล้างอสุจิ เพศสัมพันธ์ในวันไข่ตก และการฉีดอสุจิใส่ในช่องคลอดด้วยตนเอง อาจเป็นทางเลือกสำหรับคู่สามีภรรยาเหล่านี้ที่ต้องการจะตั้งครรภ์และลดความเสี่ยงของการส่งผ่านเชื้อไวรัสไปยังคู่ของตน การรับประทานยาต้านไวรัส ป้องกันก่อนสัมผัสเชื้อ อาจเป็นวิธีที่ช่วยลดความเสี่ยงได้ขึ้นโดยเฉพาะอย่างยิ่งในคู่สามีภรรยาที่มีฝ่ายใดฝ่ายหนึ่งไม่มีการติดเชื้อ
