Review

Reproduction Decision Making for Couples Affected by HIV: A Review of the Literature

Alice C. Thornton, MD, Frank Romanelli, PharmD, Jana D. Collins, BS

Medical issues faced by HIV-affected couples include transmission risks between partners and between mother and child, as well as the technologies and procedures available to reduce those risks. Assisted reproductive techniques discussed are artificial insemination, in vitro fertilization, intracytoplasmic sperm injection, self-insemination, and timed intercourse. It is important that physicians be aware of reproductive options available to couples affected by HIV and be prepared to engage in nonjudgmental dialogue with patients. This review is the result of a literature search performed to identify useful information to counsel HIV-serodiscordant and HIV-seroconcordant couples facing decisions on reproduction.

Introduction

As HIV is transmitted increasingly through heterosexual contact, physicians need to be comfortable counseling HIV-affected patients on their reproductive choices.[1] Currently, heterosexuals make up the second largest exposure group of HIV in the United States, and 30% of all new cases diagnosed are women, approximately 85% of whom are of reproductive age (ie, 13-44 years old).[2-4] Worldwide, 37 million adults are living with HIV/AIDS, and 50% are women.[5]

Historically, the medical community has considered HIV a serious barrier to reproduction. In 1985, the Centers for Disease Control and Prevention (CDC) encouraged HIV-infected women to defer pregnancy because of poor prognoses associated with HIV infection and the risk of perinatal transmission.[6,7] In 1987, the American College of Obstetrics and Gynecology (ACOG) advised physicians to encourage women infected with HIV not to become pregnant, and to inform pregnant HIV-infected women of termination options.[8] The Ethics Committee of the American Society for Reproductive Medicine suggested in 1994 that physicians "counsel couples about the consequences of using potentially infected sperm and discuss the options of donor sperm, adoption, or not having children."[9] Over the past 10 years the introduction of potent antiretroviral therapy has resulted in HIV-seropositive patients living longer, healthier lives.[7] Many health care providers now view HIV infection as a manageable chronic illness and encourage patients to maintain normal lives.[10]

The desire for HIV-infected patients to conceive has been a topic of recent research.[10-13] Similar to the general population, HIV-affected couples desire to have children.[11,13] Chen and colleagues found that 28% to 29% of 1421 HIV-infected adults surveyed desired to have children sometime in their lives.[11] In a retrospective study, HIV-infected subjects cited raising children as a way to give purpose to life.[14] In addition, many HIV-infected women reported pregnancy and childbirth as a way to regain their sense of womanhood and sexuality, often making childbearing a high personal priority.[15] In view of these data, health care professionals must balance concerns about the risks of HIV transmission with the patients' desire to have children.[16] Physicians must respect patient rights and autonomy by providing them with information that will allow them to make informed reproduction decisions.

Prior to potent antiretroviral therapy, HIV-infected women had a 25% chance of delivering an HIV-infected child, compelling physicians to recommend bilateral tubal ligation to prevent perinatal HIV transmission.[3,17] Between 1991 and 1993, early trials conducted by the Pediatric AIDS Clinical Trial Group (PACTG) found that zidovudine reduced mother-to-child transmission from 25% to 8%.[18] With antiretroviral therapy and elective cesarean section, the risk of perinatal transmission has dramatically decreased to 1% to 2%. Recent studies have also demonstrated mother-to-child transmission rates as low as 1% to 2% in women with HIV RNA levels below 1000 copies/mL regardless of mode of delivery, suggesting that perinatal transmission can be prevented in 99% of all cases.[17,19,20]

In 2001, the CDC amended its previous recommendations, stating that HIV-infected pregnant women should receive information about all reproductive options and that reproductive counseling should be nondirective and supportive of the patient's decision.[21] Currently ACOG now states that "assisted reproductive technologies should not be denied to HIV-infected couples solely on the basis of their positive HIV serostatus."[7] Unfortunately, HIV infection is the seventh-leading cause of death among children aged 1 to 4 years, and perinatal trans-

Author Affiliations: Alice C. Thornton, MD, is Assistant Professor of Medicine at the University of Kentucky and Project Director for the Bluegrass Care Clinic. Frank Romanelli, PharmD, is Assistant Professor of Pharmacy and a Clinical Specialist in HIV/AIDS at the University of Kentucky. Jana D. Collins, BS, is the Data Coordinator for the Bluegrass Care Clinic and a graduate student in the Department of Family Studies.

mission is still responsible for 90% of pediatric HIV infections.[2,22] This attests to the infectivity of the disease and the importance of bringing reproductive issues to the forefront.

In 1999 Duggan and colleagues interviewed a group of 69 HIV-infected women about reproductive concerns (ie, counseling, contraception, and pregnancy choices). Less than 50% thought that their physician had adequately counseled them regarding contraception. The group cited social workers and nurses as its main source of reproduction counseling.[23-25] Through education and a willingness to discuss reproductive options with affected couples, health professionals can alleviate patients' fears and anxieties concerning HIV infection and reproduction.

The medical and social conditions of these couples vary widely. A serodiscordant couple is defined as 1 HIV-infected partner and 1 HIV-uninfected partner. A seroconcordant couple is defined as 2 HIV-infected partners. The following case studies demonstrate the various struggles faced by couples affected by HIV as they consider reproduction. Table 1 may be useful to physicians assisting HIV-affected couples seeking reproduction.

Serodiscordant Couples

Alex and Darlene

Alex is a 30-year-old Hispanic man who was diagnosed with HIV in 2001. His HIV risk group is multiple heterosexual partners. Alex and his wife Darlene (HIV-uninfected) have a 4-year-old daughter. Alex is adherent to his therapy of zidovudine/lamivudine (combined formulation) and nevirapine, and he uses condoms regularly. His initial CD4+ cell count was 170/µL and plasma HIV RNA level was 3,013 copies/mL. On antiretroviral therapy his CD4+ cell count is 377/µL and his HIV RNA level is below 75 copies/mL.

Alex and Darlene have discussed having a second child but have not tried to conceive because of HIV transmission concerns. In 2002, Alex and Darlene began asking his physician questions about reproductive options. They were given several pamphlets on the topic but still had many questions. Alex and Darlene are interested in pursuing safe reproductive alternatives that will assure mother and child safety, but they have significant financial concerns.

Serodiscordant couples face many obstacles to considering reproduction, specifically the risk of HIV transmission between partners and transmission to the child. Men and women are each at risk of transmission from their HIV-i nfected partners. Studies indicate that although the risk of heterosexual transmission is relatively low, rate of male-to-female transmission per contact is significantly greater (0.001) than the risk of female-to-male transmission (< 0.001).[21,22,26] These probabilities increase with higher plasma HIV-1 RNA levels in the HIV-infected partner and the presence of other sexually transmitted diseases in either partner.[27]

A meta-analysis conducted by Davis and Weller in 1999 reported 0.9 seroconversions per 100 person-years of observation among participants who reported always using condoms, compared with a seroconversion rate of 6.7 per 100 person-years of observation among those who reported never using

Table **1**. Suggested Preconception Steps[7,10,12,36,67]

Disclosure of serostatus
Practicing safe sex
Preconception counseling:
Discussion of risk to partner and baby
Current and future health of infected partner(s)
HIV testing pre- and post-pregnancy
Absence of an active AIDS-defining illness
CD4+ cell count >350/µL and HIV RNA level <50,000 copies/mL
Patients receiving antiretroviral therapy:
HIV RNA level <400 copies/mL
Regimen without teratogenic drugs
Adequate therapy for at least 1 year with appropriate follow-up (stable viral load and CD4+ cell count)
Normal Physical Examination:
Women
Vaginal Papanicolaou smear
Cervical mucous culture
Screen for bacterial vaginosis
Vaginal ultrasound of uterus and ovaries
Sonohysterogram
Basal (cycle day 3) follicle stimulating hormone <15 MIU/mL and estradiol <65 pg/mL
Men
Sperm specimen analyzed for count, motility, progression, and morphology
Men and Women
Laboratory workup
Complete blood cell (CBC) differential
Liver panel
Hepatitis virus screening
Pelvic exam
Absence of active or acute sexually transmitted disease
Full sexual health screen for both partners:
HIV
Syphilis
Gonorrhea
Chlamydia
Trichomniasis
If not previously checked:
Tuberculin skin test
Chest radiograph
Immunization screening

condoms. This analysis suggests that consistent use of condoms provides an 85% reduction in HIV transmission risk, compared with no use of condoms.[28] Despite transmission risks with unprotected sexual intercourse, HIV-discordant couples are often willing to practice unsafe sexual intercourse in order to conceive. Klein and colleagues reported that 80% of HIV-affected couples surveyed who had previously conceived had engaged in unprotected intercourse to achieve pregnancy.[12] Cusick and Rhodes found that HIV-affected couples associated condom use with the "early stages" of a relationship, and that encouraging continued safer sex seemed to threaten love and intimacy as the relationship matured.[29] Because serodiscordant couples are willing to take these risks, physicians should be willing to participate in honest discussions regarding reproduction.

Interventions

Assisted Reproduction Techniques

Two assisted reproductive technologies have been studied in HIV serodiscordant couples: artificial insemination and in vitro fertilization (IVF). Some research suggests that the use of assisted reproductive techniques decreases the chance of horizontal transmission to almost negligible rates, which provides HIV-infected couples with the possibility of pregnancy while minimizing the number of "unprotected" exposures necessary to conceive.[7,30,31]

Several studies have been conducted to determine the infectivity of seminal and spermatozoal cells in order to assess the possibility of transmission from an HIV-infected man to his partner.[32-34] Quayle and colleagues reported that HIV could be found in seminal cell preparations but not in spermatozoal fractions.[34] Kim and coworkers also demonstrated that seminal plasma and nonspermatozoal cells serve as the main viral reservoir, whereas motile sperm were unlikely to be infective because of a lack of expression of CD4+ and CCR5 receptors on the spermatozoal cell surface.[29] Although there is no evidence that any of these methods will consistently provide HIV-free sperm, there are 3 established methods used to remove HIV from seminal fluid or from nonspermatozoal cells: basic sperm washing, density gradient centrifugation, and the "swim up" method. These methods can be used separately or in combination.

Basic sperm wash is based on the premise that HIV-infective material exists primarily in the seminal fluid and not within sperm cells.[35] The process begins as sperm is separated from seminal fluid by repeated cycles of centrifugation. The seminal fluid, which will then contain low-motile, dead, or abnormal spermatozoa and seminal nonspermatozoa, is discarded, and the final spermatozoal pellet can be prepared for "swim up."[33,36]

Density gradient centrifugation is used to separate seminal plasma by particle weight and size to achieve a final preparation of isolated sperm, which is then washed and layered on a dual density gradient.[7] The gradient is a colloidal silica suspension layered with the heaviest layer on the bottom and the human ejaculate on top.[37,38] The test tube is then centrifuged to separate the motile spermatozoa from human ejaculate. The nonmotile, poor-quality sperm and nonspermatozoal cells remain in the supernatant located in the top layers, and the motile sperm can swim to the bottom. The sperm pellet at the bottom of the tube can then be used for insemination.[36,37]

Following the centrifugation process, the final sperm pellet can be resuspended and overlaid in a fresh medium and allowed to incubate for 20 to 60 minutes to allow the motile sperm to "swim up" to the supernatant.[30,36] The swim-up fraction should then contain only the enriched preparation of motile spermatozoa without the other, possibly disease-laden, cellular components.[7,33]

Two groups have published data using variations of sperm washing for intrauterine insemination (IUI) in serodiscordant couples and suggest that "with appropriate processing of samples ... horizontal transmission can be avoided."[7] Semprini and colleagues assessed the feasibility of removing infective cellular components in ejaculate using gradient centrifugation, repeated washings, and swim-up techniques.[30] Indirect immunofluorescent assays using monoclonal antibodies were used to verify the absence of infected cells. Twenty-nine discordant HIV-affected couples underwent 59 insemination attempts, which resulted in 17 pregnancies—a 29% success rate. Of the 18 women inseminated, none seroconverted after 18 months of follow-up. As of 2002, Semprini and colleagues report no seroconversions in the 2000 inseminations of 800 women.[39,40]

In a study conducted by Marina and colleagues, the processed semen of 63 HIV-infected men was evaluated for HIV.[31] Researchers processed semen utilizing sperm washing, density gradient centrifugation, and swim-up techniques. They evaluated the specimens by HIV RNA and DNA polymerase chain-reaction (PCR) testing to verify lack of HIV DNA. Thirty-one pregnancies were reported, and 37 children were born with no evidence of transmission to the HIV-uninfected mother. Mothers were HIV seronegative at least 6 months after their last IUI.

A study conducted by Sauer and Chang used in vitro fertilization with intracytoplasmic sperm injection (ICSI) to reduce the risk of transmission from an HIV-infected man to an HIV-uninfected woman. To eliminate the presence of HIV-infected semen and nonspermatozoal cells, this process used a single sperm to fertilize (in vitro) the egg of an HIV-uninfected woman. Semen samples from asymptomatic HIV-infected men were processed using density gradient centrifugation to produce a pellet of purified motile sperm, which was then used to inseminate the egg. Thirty-four women underwent 55 treatment cycles, resulting in 25 pregnancies and 17 deliveries. During this study, no seroconversions were noted in 6 months for those women who did not get pregnant, and for 3 months after delivery for the 17 mothers. Also, there were no seroconversions reported among the 25 delivered infants.[10]

Limitations of Reproductive Techniques

Although assisted reproductive technologies seem to provide a possible alternative for HIV-affected couples who desire reproduction, many remain unconvinced that these are entirely risk-free procedures. In editorials, CDC experts questioned the apparent success of the European studies that serve as the

backbone of the assisted reproductive research.[41,42] The CDC authors assert that because of lack of follow-up in the European studies, their statistical relevance remains unproven, and that "it would be difficult to assess whether intrauterine insemination (IUI) with processed semen is less risky than unprotected intercourse because the rate of sexual transmission is very low (one to two transmissions per 1000 acts of protected intercourse)."[41] They argue that small sample sizes in the European studies limit the applicability of assisted reproduction to a larger population.

Twinning is also considered a potentially negative consequence of assisted reproductive technologies. For the US population, there are approximately 29.3 twin births per 1,000 total births, a twinning rate of 2.93%.[43] The twinning rates with assisted reproductive technologies are much higher. For example, Marina and colleagues reported a 20% twinning rate in 37 births to 31 women.[31] Sauer and Chang's research reported 17 pregnancies with a twinning rate of 35%.[10] Finally, in 2003, Marina and colleagues reported a twinning rate of 30% in 58 women undergoing IVF and ICSI.[44]

Assisted reproductive techniques are expensive ($10,000 to $17,000 per cycle) and thus many couples find them exclusionary. In a study of serodiscordant couples who sought in vitro fertilization, the majority of patients were employed (90%) and had college degrees (82%-84%).[12] National surveillance studies, however, suggest that the poor (ie, not employed and less educated) are disproportionately affected by HIV, placing expensive reproductive procedures out of reach for the majority of couples.[1]

Physicians can still provide useful guidance to couples with little or no access to these expensive procedures. Oyesiku and Turner describe timed ovulatory intercourse as a "relatively safe and cost-effective" reproductive option, provided that the male partner's HIV viral load is below detectable levels and the CD4+ cell count is above 400/µL.[35] Gilling-Smith also described timed intercourse using ovulation detection methods, citing a 4% transmission rate in 92 serodiscordant couples, with seroconversions restricted only to partners who reported inconsistent condom use outside the "fertile period."[36] Both partners should be screened for factors known to reduce fertility prior to timed intercourse to prevent unnecessary exposure to the seronegative partner (Table 1). Men can provide single semen specimens that can be analyzed for count, motility, progression, and morphology in both ejaculate and swim-up. Women should receive pelvic ultrasonographic scans during the early follicular phases of their cycles, as well as endocrine profiles of follicle-stimulating, luteinizing, and thyroid functioning hormones.[36] Physicians can then more accurately advise patients with regard to engaging in unprotected intercourse during the "fertility period."

The fertility period is defined as the specific days relative to ovulation during which a woman is most likely to conceive,[45] which consists of 6 days: the day of ovulation and 5 days prior.[46] There are 5 recognized methods used to identify the fertility window: basal body temperature, calendar calculation, serial ovarian ultrasound, hormones in urine, and vaginal discharge. Calendar calculation and basal body temperature are considered the most unreliable methods of ovulation detection. Calendar calculation depends on statistical averages, which are variable and may unduly expose HIV-uninfected women to HIV, and basal body temperature typically does not rise until after ovulation, creating difficulty in identifying the actual day of ovulation.[45] Serial ovarian ultrasound is highly accurate but expensive and not readily available. Urine luteinizing hormone (LH) kits detect a rise in LH, which occurs between 16 and 48 hours before ovulation, making them moderately effective in determining ovulation. Monitoring changes in cervical and vaginal discharge is considered the most effective method of determining ovulation. Type E (estrogenic) mucus occurs 5 days to 6 days prior to ovulation, during the fertility window. The clear, stretchy, slippery discharge facilitates the transport and survival of sperm in the cervix, and is known to be the best indication of ovulation.[38]

Beth and Sam

Beth is a 26-year-old white woman who was diagnosed with HIV in October 1999. She contracted HIV and hepatitis C virus (HCV) through heterosexual intercourse with a previous boyfriend, an injection drug user. Beth now lives with her current boyfriend, Sam, who has consistently tested seronegative for HIV. Beth's most recent CD4+ cell count was 690/µL, and her most recent HIV RNA level was 2,362 copies/mL. She is not currently on antiretroviral therapy.

Sam and Beth are practicing safe sex (they use condoms) but are ready to do "whatever it takes" to have a child. The couple has questioned Beth's physician about available options and has extensively researched their options. They are now confident that they are aware of every option available to date. However, Beth thinks they should defer any procedure until they can be guaranteed 100% safety for Sam and the child.

Serodiscordant couples in which the woman is HIV-infected have significant concerns about HIV transmission to the child and transmission to the HIV-uninfected man. Although recent data indicate that a low viral load greatly reduces perinatal transmission risk, more than 90% of HIV infections in children are acquired from mother-to-child transmission, with most cases occurring during labor, delivery, or via breast-feeding.[7]

Nearly 33% of HIV-infected individuals are coinfected with HCV, which should be a factor when considering reproduction.[7] Women on antiretroviral therapy who are coinfected with HCV are at risk of liver cirrhosis and have higher mortality than those with HCV infection alone.[47] Because of reports of increased risk of perinatal HIV transmission among women who are coinfected with HIV and HCV, women with HCV coinfection should be evaluated by a hepatologist experienced with HIV coinfection.[7,48]

Pregnancy does not exacerbate HIV disease progression in women with asymptomatic, controlled disease. However, it is advisable to avoid certain antiretroviral drugs during pregnancy.[49-53] Drug combinations that include didanosine and stavudine, for example, are associated with complications, albeit rarely, including metabolic acidosis, which may occur at a higher rate in pregnancy.[54] Hepatic toxicity with nevirapine may also be more common in pregnancy, and recent recommenda-

tions suggest frequent liver-function monitoring, particularly early in therapy.[55] HIV-infected pregnant women taking protease inhibitors (PIs) should be closely monitored because of the association of metabolic disturbances (including hyperglycemia and diabetes mellitus), which deserve particular attention given the rate of gestational diabetes among HIV-uninfected pregnant women.[56,57] The PIs indinavir and atazanavir can cause hyperbilirubinemia and thus carry a risk of kernicterus.[56,58] Efavirenz and amprenavir are associated with tetratogenicity and should be avoided during pregnancy.[7] The long-term outcomes of in utero exposure to antiretroviral drugs have yet to be determined.[7]

Artificial insemination and self-insemination can be used to decrease the risk of HIV transmission to the male partner. Ohl and colleagues identified IVF and ICSI as the artificial insemination techniques of choice for an HIV-infected woman in a serodiscordant couple.[59] IVF optimizes the probability of success and diminishes the number of attempts necessary to conceive. The ICSI method, the most expensive assisted-reproductive procedure, involves the injection of a single sperm directly into the cytoplasm of a mature egg, and reduces the delay of conception. However, neither process is available to HIV-infected women in the United States. Instead, at Columbia University's Center for Women's Reproductive Care in New York, IUI is performed on HIV-infected women with sperm from an HIV-uninfected man.[60] Self-insemination is a viable, low-cost alternative for the serodiscordant couple. Women can inseminate themselves with freshly ejaculated semen using a syringe (without the needle) or a disposable plastic Pasteur pipette.[61]

Seroconcordant Couples

Jose and Marianne

Jose is a 37-year-old man diagnosed in 1992 with HIV, which he contracted through heterosexual contact. He is coinfected with HCV. Jose is married to Marianne, who he met at an HIV support group, and together they have a 4-year-old daughter (HIV-uninfected). His most recent CD4+ cell count was 703/µL, and his plasma HIV RNA level was less than 50 copies/mL. He has been on a regimen of zidovudine/lamivudine (combined formulation) and indinavir for more than five years.

Marianne is a 33-year-old woman who contracted HIV in 1993 through intravenous drug use and has been clean for 8 years. Her most recent CD4+ cell count was 414/µL, and her most recent HIV RNA level was 4,000 copies/mL. She is on no antiretroviral medications, but she previously took zidovudine during her first pregnancy, with which she had a cesarean section.

Marianne is pregnant with their second child. Marianne was not on antiretroviral therapy while they were trying to conceive, and she is now concerned about starting antiretrovirals because of possible effects of the medications on her unborn child. Jose and Marianne usually use condoms during sexual activity.

Current treatment guidelines suggest seroconcordant couples like Jose and Marianne should practice safe sex because of possible transmission of drug-resistant HIV strains or superinfection.[62] However, Rhodes and Cusick found that unprotected sex was deemed an acceptable risk by partners in a seroconcordant relationship, citing that no HIV-infected respondents continued "safe sex" beyond the "early stages" of their relationship.[63] Adam and Sears interviewed 60 people with HIV or AIDS and 40 of their caregivers, and their results confirm that HIV-infected individuals thought seeking a seroconcordant partner was an acceptable alternative to celibacy.[64] Once relationships became more intimate, the use of condoms served as a sign of "emotional distance" and "a protection from one another."[63] However, Squires notes the necessity of safe sex between seroconcordant partners, citing the possible threat of horizontal and vertical transmission of a drug-resistant strain of HIV.[65]

HIV-infected women may worry about the effects that antiretroviral drugs will have on the pregnancy and the child. The International AIDS Society–USA (IAS–USA) suggests that before establishing a peripartum therapy, mothers should undergo drug resistance testing to ensure that the treatment chosen is effective for the mother herself and for preventing transmission of a drug-resistant strain of HIV to the child.[66] In June 2003, the Public Health Service Task Force's *Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV-1 Transmission in the United States* noted that pregnancy requires "unique considerations, including the possible need to alter dosage as a result of physiologic changes associated with pregnancy and the potential for adverse short- or long-term effects on the fetus and newborn."[67] No studies have indicated that there is an increase in birth defects related to HIV infection; however, efavirenz is not recommended in the early stages of pregnancy.[68] Birth defects (anencephaly, anopthalmia, or cleft palate) occurred in 15% of monkeys born after efavirenz exposure during the first trimester of pregnancy.[69] According to the Antiretroviral Pregnancy Registry (http://www.apregistry.com/), the rate of birth defects among infants born to 400 women exposed to zidovudine or lamivudine during the first trimester has been no higher than the rates among infants who were exposed after the first trimester.[69] Additionally, there are no well-controlled studies of teratogenicity using nevirapine, therefore it should be used with caution and in accordance with its label.

There may also be enhancement of metabolic side effects, such as mitochondrial toxic effects leading to increased lactic acidosis in pregnant women on nucleoside reverse transcriptase inhibitors (nRTIs).[67,69] Some researchers question that there may be mitochondrial dysfunction in infants exposed to nRTIs; however, a review examining 16,000 children in cohorts in the United States showed no increase in the rate of death in children exposed to nRTIs, compared with children with no such exposure, and "no deaths were found to be definitely related to mitochondrial toxicity."[67,69] Although reports have been conflicting, physicians should also be aware of the potentially increased risk of preterm delivery among HIV-infected women who are receiving combination antiretroviral therapy.[67,69]

Physicians should consider screening women with HIV for vaginal disease. Bacterial vaginosis is associated with adverse pregnancy outcomes, including premature rupture of mem-

branes, preterm labor, preterm birth, and postpartum endometritis.[70] Trichomoniasis, which can be found in women with HIV, is also associated with adverse pregnancy outcomes such as premature rupture of the membranes, preterm delivery, and low birth weight.[70] Additionally, HIV-infected women should be carefully assessed for anovulation or amenorrhea secondary to HIV infection, or other causes such as hypothalamic disorders or substance abuse.

Before considering pregnancy, some studies suggest it is important to have a viral load below the limits of detection.[16] Expensive procedures such as IVF and ICSI with prepared sperm, as mentioned for serodiscordant couples, are viable alternatives for seroconcordant partners.[7] Though not without risks, timed intercourse combined with suppressed viral load and proper prenatal care can often produce a healthy, HIV-uninfected child.[16]

Conclusion

Sauer, in a recent commentary, summarizes the state of assisted reproductive care in HIV serodiscordant couples.[39] Sauer points out that although European centers have been using IUI or IVF in serodiscordant couples with no seroconversions, many US physicians are concerned about transmission occurring through IUI. Currently, there are no established laboratory measures to ensure the safety of the uninfected spouse and fetus. Additionally, knowingly inseminating a woman with sperm from an HIV-infected man has been established by several states as a criminal act. At Columbia University in New York, ICSI is performed on HIV-uninfected women with sperm washed from HIV-infected men. The group also performs IUI on HIV-infected women with sperm from HIV-uninfected men.[60]

Couples affected by HIV may be interested in engaging their medical provider in discussions about available reproductive options. It is important that physicians are aware of the reproductive options available to serodiscordant and seroconcordant couples. Recognizing the issues these couples face will enable physicians to offer honest, nonjudgmental preconception counseling. For couples affected by HIV, preconception care must focus on infection status, viral load, immune status, and education regarding risk of HIV transmission.[67] A multidisciplinary team (infectious diseases, obstetrics, etc) may be beneficial.

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