



Hormonal Contraception and HIV: Is there a Link?

With the AIDS pandemic taking a disproportionate toll on women around the globe, scientists have been exploring a host of issues that could influence women's susceptibility to HIV/AIDS. A growing number of studies are available that explore the complex question of whether using hormonal contraceptives – like “the Pill” or “the shot” – could affect a woman's risk of being infected with HIV or developing AIDS. Researchers have investigated more than half a dozen theoretical mechanisms by which hormonal contraception might affect HIV infection and progression to AIDS – for example, by changing the cells or cell layers in the vagina, increasing the chances of having other reproductive tract infections, or increasing how much virus an HIV-infected woman has in her vagina. Despite some contradictory results in the studies that have been conducted, the weight of the evidence indicates that use of hormonal contraception does not increase a woman's risk of HIV infection or progression to AIDS. Hormonal contraceptives are excellent family planning methods that protect women's health and the health of their children. All women should have access to the full range of contraceptive methods regardless of HIV status. Condoms remain the only family planning method that also protects against HIV infection.

• What is the impact of the AIDS pandemic on women?

Today, women account for about half of the 33 million people living with HIV worldwide. Women are disproportionately affected by HIV, accounting for 60% of HIV infections in sub-Saharan Africa and 60% of all infections among young people ages 15-24.^{1,2} Although rates of HIV infection among women are stabilizing globally and decreasing in some regions, rates continue to increase in other areas (for example Eastern Europe and the former Soviet Union) or have stabilized at very high levels in other regions most affected by the AIDS pandemic (notably sub-Saharan Africa). The vast majority of those infected with HIV live in developing countries, and AIDS is taking its greatest toll in sub-Saharan Africa. Home to only 10 percent of the world's population, this region is home to 67 percent of all people living with HIV¹ – including three-quarters of all HIV-infected women.⁴

• What behavioral factors increase a woman's risk of HIV infection?

More than three-quarters of HIV infections are sexually transmitted,⁵ making a woman's sexual activity and sexual partners important predictors of whether she is at risk. How many sexual partners a woman has, how prevalent HIV is in her community, how often she has intercourse, and how frequently she uses condoms all influence whether – and how much – a woman might be exposed to HIV. The degree to which she can control these factors – and thus limit her HIV exposure – may be influenced by broader social, cultural, or economic forces. Significant proportions of young women report violence or coercion as part of their first sexual experiences, and widespread violence against women, including rape in conflict situations, contributes to women's vulnerability to HIV.¹ In sub-Saharan Africa, marriage is recognized as an HIV risk factor for monogamous women, whose lack

of rights within the marriage, inability to say “no” to sex, difficulties negotiating condom use, and/or partner infidelity increase their chances of exposure to the virus.⁶

- **Do sexually transmitted infections (STIs) affect a woman’s risk of contracting HIV?**

Infection with bacterial or viral STIs can increase the likelihood that a woman will become infected with HIV if she is exposed to the virus through sexual contact. Syphilis, type-2 genital herpes, and chancroid cause genital ulcers that can lead to breaks in the genital tract skin, thus providing a “portal” for the HIV virus. The infections chlamydia, gonorrhea, and trichomoniasis appear to increase the concentration of the kinds of cells that the HIV virus targets. Researchers estimate that STIs can increase a woman’s risk of infection by at least two to five times for each exposure to an infected sexual partner. Many STIs produce no obvious symptoms in women, leaving many unaware that they are infected and need treatment or that they have a condition that can increase their susceptibility to HIV. Treatment of STIs can help reduce the risk of HIV transmission.⁷ This underlines the need for women to have access to reproductive health services where STI testing is available so they can catch problems that could affect their health but that they might otherwise not recognize.

- **Are there other biological factors that increase a woman’s risk of HIV infection?**

Basic biological differences appear to make women more susceptible to HIV infection than men. Studies indicate that a woman is at least twice as likely as a man to become infected during a single act of heterosexual intercourse with an HIV-positive partner.⁸ Experts attribute a woman’s vulnerability to HIV infection to a host of factors, including the female genital tract’s larger surface area and its greater susceptibility to tearing during sex (even in tiny, generally unnoticeable ways); in addition, the male sexual fluids to which a woman is exposed are typically larger in volume and higher in viral content than the corresponding female fluids to which a man is exposed.⁹

- **What factors increase a woman’s risk of HIV progression?**

HIV takes an average of 10 years to develop into AIDS. However, medical treatments and health interventions can extend that timeline and a number of other factors can influence the time between HIV infection and AIDS or death, including genetic makeup, nutrition, age, and stress.¹⁰ Research in rural Uganda, for example, shows that factors like poverty, limited food and water supplies and high rates of bacterial infections can influence the rate of progression.¹¹

- **Could hormonal contraception affect the risk of HIV transmission and progression?**

Several studies have tried to see if there is any impact on HIV risk when women use certain hormonal contraceptives, namely Depo Provera (the quarterly shot with a synthetic progestin) and oral contraceptive pills (with a progestin and an estrogen). So far, researchers have come to varying conclusions about whether these highly effective birth control methods might raise the risk of contracting HIV or – for women who are already infected – increase the chances they will infect a partner or develop active disease more quickly. Some studies show an effect due to hormonal contraceptives, while others find none. Still other studies report only certain groups of women may be affected. One large, well-designed study that evaluated thousands of women found that there was no increase in risk of HIV among women who used hormonal contraceptives.¹² A recent re-analysis of the data suggests that hormonal contraception’s affect on HIV acquisition may vary depending on

a woman's age and the type of contraception.¹³ There have been similarly conflicting results in studies of HIV progression to death or AIDS.^{14,15,16} Taken together, the research available today does *not* demonstrate a link between hormonal contraceptive use and HIV infection or progression in women in the general population. At a meeting convened by the World Health Organization in 2005, participants reviewed the available data and concluded that no restrictions should be placed on women's access to the full range of hormonal contraceptive options.^{17, 18}

- **Why do different studies show different results?**

The varied results may reflect the challenges of studying this topic in the first place. It is difficult for researchers to separate the impact – if any – of hormonal contraceptives on HIV risk from the impact of other variables that are already known to be linked to HIV infection and progression. For instance, participants in the studies are asked to provide information about their sexual histories and behaviors which relate to transmission of the virus. Yet many people find it hard to talk about sex, especially when it comes to what most significantly influences risk for HIV infection, such as number of sexual partners, frequency and type of sexual activity, and degree of condom use. Also, because women are more likely to use effectively a birth control method they have chosen, participants in most of these studies also decide for themselves which contraceptive method, if any, they will use – rather than being assigned one at random. But since a woman's contraceptive choice reflects a host of issues related to her sexual behavior and lifestyle, it is possible that women who choose hormonal contraception might be different from those who do not in ways that would increase their risk for HIV infection. Finally, although no link has been proven, hormonal contraceptives may affect HIV acquisition and progression differently depending on their chemical composition (e.g. progestin only versus progestin and estrogen based contraception), which might account for why studies have come to different conclusions. While researchers try to anticipate and correct for such problems, even well-conducted studies and analyses may not be able to overcome these limitations.

- **How many women of reproductive age rely on hormonal contraceptives to prevent pregnancy?**

Worldwide, an estimated 716 million women aged 15-49 use contraception. More than one in 10 women of reproductive age relies on hormonal contraceptive methods, including the pill, injectables and implants. The proportion of women using hormonal methods and the specific methods they choose vary considerably by region and country. For example, while the majority of women using injectable hormonal contraception live in developing nations, the daily pill accounts for the bulk of hormonal contraceptive use globally, particularly among women in developed countries.^{22,20}

- **How effective are hormonal contraceptives at preventing pregnancy?**

Hormonal contraceptives are extremely effective reversible birth control methods, providing near-total protection against pregnancy if used perfectly. There are nearly half a dozen options to choose from today, all of which can prevent pregnancy in over 99.5 percent of users in a given year. Even after accounting for how they are used in real life, hormonal contraceptives remain highly effective –ranging from 92 percent for the pill and other user-initiated methods like the patch and vaginal ring to over 99 percent for implants.²¹ These birth control methods are also quickly reversible for women who decide they want to become pregnant. For more detailed information on hormonal contraception, go to:

- International Planned Parenthood Federation:
<http://www.ippf.org/en/Resources/Contraception/Contraception.htm>
- Planned Parenthood Federation of America:
<http://www.plannedparenthood.org/birth-control-4211.htm>
- Association for Reproductive Health Professionals:
<http://www.arhp.org/topics/contraception>

• How effective are condoms at preventing pregnancy and protecting against HIV infection?

The latex male condom is the only birth control method proven in both laboratory and clinical studies to protect against both pregnancy and infectious disease. There is a two percent probability that a woman will get pregnant in the first year if she and her partner use the male latex condom perfectly (every time they have sex); that likelihood is closer to 15 percent with typical (real life) use, making condoms significantly less effective for contraception than hormonal birth control.²¹ However, unlike other forms of contraception, condoms are highly effective at preventing HIV transmission when used correctly and consistently. Laboratory studies show that HIV does not pass through latex, and a meta-analysis of studies of discordant heterosexual couples – where one partner is HIV positive and the other is not – found consistent male latex condom use decreased the risk of HIV/AIDS transmission by approximately 85 percent.²² Effectiveness rates for the female condom – a polyurethane sheath inserted into the vagina before sexual intercourse – in preventing pregnancy are slightly lower than for the male condom: there is an estimated five percent probability that a woman will get pregnant in the first year with perfect use and 21 percent with typical use.²³ Laboratory studies also show that the female condom blocks sexually transmitted infections, including the HIV virus.²⁴

• Given even the possibility of a risk, why not encourage women to substitute condoms for hormonal contraception?

While pregnancy may be a welcome event, it can also carry significant health risks for women. Fifteen percent of pregnancies worldwide result in complications, including potentially fatal conditions. Roughly 536,000 women die each year from pregnancy-related causes such as hemorrhage, sepsis, eclampsia, obstructed labor, and unsafe abortion. The vast majority (99%) of these deaths take place in developing countries. The risks of pregnancy-related death and injury vary widely by region: A woman in sub-Saharan Africa has a one in 22 chance of dying in pregnancy or childbirth in her lifetime, compared with a one in 7,300 risk for a woman in a developed country. Because as many as half of all pregnancies worldwide are unintended – meaning that they are mistimed or unplanned – access to effective contraception is critical to reduce high rates of maternal death and injury. Indeed, experts estimate that meeting the current demand for family planning worldwide could cut maternal mortality and morbidity by more than one third.²⁵ HIV-positive women have high rates of unintended pregnancy and are at higher risk for maternal mortality; it is important that they too have access to the full range of contraceptive options.²⁶

Even if researchers were to confirm a connection between hormonal contraception and HIV, it would likely be quite modest – especially compared to other, well-documented risk factors for HIV/AIDS. Given that hormonal contraception is more effective at preventing pregnancy than condoms, and given the risks from pregnancy we have discussed above, the implications of any possible hormonal contraception/HIV link would differ from woman to woman and from region to

region. Uninfected women at high risk for unintended pregnancy but low risk of being exposed to HIV (such as those in monogamous relationships with uninfected partners or living in areas with low infection rates) might choose to continue using hormonal contraception. Similarly, it would likely remain a critical – even life-saving – method for women living in regions with high rates of maternal mortality and morbidity due to complications from pregnancy, childbirth, and unsafe abortion. By contrast, in areas with lower maternal mortality but high HIV rates, an uninfected woman might consider switching to a birth control method like the condom because it is proven to protect against infection. Similarly, if research shows a causal link between hormonal contraception and faster progression to AIDS, an HIV-positive woman might also consider switching methods. Currently, both the CDC and WHO recommend hormonal contraception as a safe and effective birth control method for women who are HIV-positive or at high risk for HIV.^{27,18}

However, public health experts recommend that ALL women at risk of exposure to the HIV virus – whether they are using hormonal contraception or not – should use condoms during intercourse. Even if, as seems to be the case at present, hormonal contraceptives do not increase a woman's risk of contracting HIV, they do nothing to protect her from HIV and other sexually transmitted infections. As of now, condoms are the only method for prevention of HIV transmission during sex.

Gynuity Health Projects

is a research and technical assistance organization dedicated to the idea that all people should have access to the fruits of medical science and technology development. Our goal is to make reproductive health technologies more convenient, more acceptable, safer, and more widely accessible.

<http://gynuity.org/>

Ibis Reproductive Health

A non-profit organization based in Cambridge, MA that aims to improve women's reproductive health, choices, and autonomy. Ibis' work includes clinical and social science research, policy analysis, and evidence-based advocacy.

www.ibisreproductivehealth.org

Reproductive Health Technologies Project

A DC-based non-profit organization working to advance the ability of every woman to achieve full reproductive freedom with access to the safest, most effective, and preferred methods for controlling her fertility and protecting her health.

www.rhtp.org

For further reading on HIV progression and infection:

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5. Kiddugavu M, et al. Hormonal contraceptive use and HIV-1 infection in a population-based cohort in Rakai, Uganda. *AIDS*, 2003;17(2):233-40.
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¹ UNAIDS, *Report on the global AIDS epidemic*, 2008.

² UNAIDS/UNFPA/UNIFEM, *Women and HIV/AIDS: Confronting the Crisis*, 2004.

⁴ UNAIDS/UNFPA/UNIFEM, *Women and HIV/AIDS: Confronting the Crisis*, 2004.

⁵ United Nations Population Fund (UNFPA), *State of the World Population 2004*.

- 6 Sinding, SW, “Does 'CNN' (Condoms, Needles, Negotiation) Work Better than 'ABC' (Abstinence, Being Faithful and Condom Use) in Attacking the AIDS Epidemic?” *International Family Planning Perspectives* 31:1 (2005).
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