

Hormonal Contraception and HIV: Is there a Link?

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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 exploring 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 – 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. The weight of the evidence available indicates that use of hormonal contraception does not increase a woman's risk of HIV infection. Despite some contradictory results in the studies that have been conducted, no link between hormonal contraceptive use and HIV transmission has been proved to date. Hormonal contraceptives are excellent family planning methods, and are appropriate for all women who want to prevent an unintended pregnancy. Condoms, however, 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 nearly 40 million people aged 15-49 living with HIV.¹ The last decade has witnessed a dramatic rise in the proportion of HIV-infected adults who are women.² HIV infection is increasing faster among women than among men– particularly in regions of the world most affected by the AIDS pandemic.³ Perhaps most troubling is the impact of this epidemic on *younger* women: among people ages 15-24 living with HIV/AIDS, more than 60 percent are women.⁴ The vast majority of those infected with HIV live in developing countries,⁵ and AIDS is taking its greatest toll in sub-Saharan Africa. Home to 10 percent of the world's population, this region is home to 60 percent of all people living with HIV– including three-quarters of all HIV infected women.⁶

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

More than three-quarters of HIV infections are sexually transmitted,⁷ 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, while “transactional sex” – sex exchanged for basic necessities

– is common in many areas hard hit by HIV/AIDS.⁸ In sub-Saharan Africa, marriage is now 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.⁹

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. Researchers estimate that these kinds of STIs can increase a woman’s risk of infection by as much as 50 to 100 times for each exposure to an infected sexual partner. Infection with chlamydia, gonorrhea, and trichomoniasis appears to increase the concentration of the kinds of cells that HIV targets – resulting in a two- to five-fold increase in the risk of HIV transmission.¹⁰ 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.¹¹ Treatment of curable STIs, like chlamydia, gonorrhea, trichomoniasis and syphilis, can help reduce the risk of HIV transmission. 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.¹² 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.¹³

Could hormonal contraception affect HIV risk?

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 of hormonal contraceptives, while others find none. Still other studies report only certain groups of women may be affected. A recent 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. Taken together, the research available today does *not* demonstrate a link between hormonal contraceptive use and HIV infection in women in the general population.¹⁴

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. For instance, participants in the studies provide information about their own sexual histories and behaviors – factors that are directly related 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. Because women are more likely to effectively use a birth control method they have chosen, participants in 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. 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 635 million women – 61 percent of women aged 15-49 – use contraception.¹⁵ More than 100 million – or nearly one in 10 women of reproductive age – rely on hormonal contraceptives, although the proportion of women using these options and the specific methods they choose vary considerably by region and country. The daily pill accounts for the bulk of hormonal contraceptive use, particularly among women in developed countries: Roughly seven percent (7%) of reproductive-age women worldwide rely on the Pill, but this rate is significantly higher in developed regions (15.7%) than in developing regions (5.7%).¹⁶

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 might be 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 97 percent for monthly and quarterly injections to over 99 percent for implants.¹⁷ These birth control methods are also quickly reversible for women who decide they want to become pregnant.

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; that likelihood is closer to 15 percent with typical use, making condoms significantly less effective for contraception than hormonal birth control.¹⁸ 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.¹⁹ 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.²⁰ Laboratory studies also show that the female condom blocks sexually transmitted infections, including the HIV virus.²¹

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 529,000 women die each year from pregnancy-related causes such as hemorrhage, sepsis, eclampsia, obstructed labor, and unsafe abortion. The vast majority (95%) of these deaths take place in Africa and Asia. The risks of pregnancy-related death and injury vary widely by region: A woman in sub-Saharan Africa has a one in 16 chance of dying in pregnancy or childbirth in her lifetime, compared with a one in 2,800 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 reducing 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 at least 20 percent.²²

Even if researchers were to find a connection between hormonal contraception and HIV some

day, 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. 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, a woman might consider switching to a birth control method like the condom because it is proven to protect against infection.

It should be stressed, however, that public health experts recommend that ALL women at risk of being exposed to HIV – 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 this risk. As of now, condoms are the only method for prevention during sex.

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References

- ¹ UNAIDS, *Fact Sheet: Global Facts and Figures*, July 2005; UNAIDS, *Fact Sheet: Women and AIDS – A Growing Challenge*, November 2004; UNAIDS/UNFPA/UNIFEM, *Women and HIV/AIDS: Confronting the Crisis*, 2004.
- ² UNAIDS, *Fact Sheet: Women and AIDS – A Growing Challenge*, November 2004.
- ³ UNAIDS/UNFPA/UNIFEM, *Women and HIV/AIDS: Confronting the Crisis*, 2004; UNAIDS, *Fact Sheet: Women and AIDS – A Growing Challenge*, November 2004.
- ⁴ UNAIDS/UNFPA/UNIFEM, *Women and HIV/AIDS: Confronting the Crisis*, 2004.
- ⁵ UNAIDS/UNFPA/UNIFEM, *Women and HIV/AIDS: Confronting the Crisis*, 2004.
- ⁶ UNAIDS/UNFPA/UNIFEM, *Women and HIV/AIDS: Confronting the Crisis*, 2004.
- ⁷ UNFPA, *State of the World Population* 2004.
- ⁸ UNAIDS, *Fact Sheet: Women and AIDS – A Growing Challenge*, November 2004.
- ⁹ 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).
- ¹⁰ Centers for Disease Control and Prevention, *Fact Sheet: The Role of STD Detection and Treatment in HIV Prevention*; Centers for Disease Control and Prevention, National Prevention Information Network, *STDs: Making the Connection*.
- ¹¹ Institute of Medicine, *The Hidden Epidemic: Confronting Sexually Transmitted Diseases*, National Academy Press, Washington, DC, 1996.
- ¹² United Nations, International Women's Day 2004 Backgrounder: *Women and HIV/AIDS: Advocacy, Prevention and Empowerment*; World Health Organization, *Gender and HIV/AIDS*.
- ¹³ World Health Organization, *Gender and HIV/AIDS*.
- ¹⁴ Morrison, CS, et al, “Hormonal contraception and the risk of HIV acquisition” *AIDS* 21:1 (2007).
- ¹⁵ United Nations Department of Economic and Social Affairs Population Division, *World Contraceptive Use 2003*, New York, NY, 2004.
- ¹⁶ United Nations Department of Economic and Social Affairs Population Division, *World Contraceptive Use 2003*, New York, NY, 2004. These estimates likely under-represent the actual proportion of women who rely on hormonal contraception because they fail to take into account users of an IUD that releases synthetic progestin. Available data do not distinguish between different types of IUDs – which collectively account for the contraceptive choice of nearly 14% of women worldwide.
- ¹⁷ Hatcher, RA et al, *Contraceptive Technology*, 18th Edition, Ardent Media, New York, NY, 2004.
- ¹⁸ Hatcher, RA et al, *Contraceptive Technology*, 18th Edition, Ardent Media, New York, NY, 2004.
- ¹⁹ National Institute of Allergy and Infectious Diseases, *Workshop Summary: Scientific Evidence on Condom Effectiveness for Sexually Transmitted Disease (STD) Prevention*, July 20, 2001.
- ²⁰ Hatcher, RA et al, *Contraceptive Technology*, 18th Edition, Ardent Media, New York, NY, 2004.
- ²¹ UNAIDS, *Fact Sheet: Basic Facts on the Female Condom*, May 8, 2004; World Health Organization and UNAIDS, *The Female Condom: a guide for planning and programming*, 2000.
- ²² UNFPA, *Maternal Mortality Update 2004*; UNFPA, *State of the World Population* 2004; UNFPA, *Fast Facts on Maternal Mortality and Morbidity*; UNFPA, *Reducing Risks by Offering Contraceptive Services*; New York, NY, 2004.

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