

Review article

# Use of intrauterine devices and systems by HIV-infected women

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## Abstract

Human immunodeficiency virus (HIV)-infected women have unique contraceptive needs. HIV infection is now considered a chronic disease and contraceptive options have widened for HIV-infected women. However, there are safety concerns regarding the use of intrauterine devices and systems in HIV-infected women. Although studies are limited, intrauterine devices appear to be safe for use by most HIV-infected women. This is a review of the available data and international recommendations.

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## 1. Introduction

Worldwide, there were 40.3 million human immunodeficiency virus (HIV)-infected individuals in 2005. Of these, 43% or 17.5 million were women. The majority of these women (13.5 million) lived in sub-Saharan Africa and were infected by heterosexual contact [1]. In the United States, there were 1 million infected individuals in 2003 [1], including at least 123,000 women [2]. Heterosexual contact accounts for 71% of HIV infection transmission to U.S. women. African American women are disproportionately affected in the United States; they account for 64% of HIV-infected women [2]. HIV infection was not among the 15 leading causes of death for Americans in 2002. However, HIV infection consistently ranked higher as a cause of death for African American women than for other women. For example, HIV infection was the eighth cause of death in White and Asian/Pacific Islander women aged 25–34 years. In the same age group, it was the seventh and fifth cause of death for American Indian and Hispanic women, respectively. For African American women in the same age group, HIV infection was the leading cause of death [3].

Individuals infected with HIV are often reproductive-aged; of people living with HIV/AIDS, the majority are aged 30–54 years [2]. Fertility is unaffected by HIV infection. The average woman spends 29 years at risk for

pregnancy and may seek contraception when she is not pregnant [4]. In the early years of the HIV/AIDS epidemic, HIV-infected women faced the prognosis of an early death and a 25% vertical transmission rate [5]. Many opted for sterilization as their mode of contraception. Since the advent of highly active antiretroviral therapy (HAART) and the reduction of vertical transmission to 2% with peripartum zidovudine [5] and elective cesarean delivery [6], more HIV-infected women may be seeking reversible contraceptive methods. In an analysis of 367 mostly African American HIV-infected women in Dallas, Texas, who had been pregnant from 1993 to 2002, Stuart et al. [7] found that significantly fewer of them opted for sterilization after implementation of antiretroviral therapies to decrease vertical transmission. During that same period, condom and injectable depot medroxyprogesterone acetate use increased [7].

There are three main concerns in contraceptive selection by HIV-infected women:

1. HIV-infected women should seek contraception that is highly effective; they need to be assured of a low risk of failure since some HAART regimens can be teratogenic and most have not been studied in pregnancy. For example, efavirenz has been associated with fetal neural tube defects after first-trimester exposure [8].
2. HIV-infected women should seek a contraceptive that is compatible with their HAART regimen, as hormonal contraceptives are known to interact with

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HAART medications. Contraceptive steroid levels are decreased by the protease inhibitors nelfinavir, ritonavir and lopinavir/ritonavir and increased by atazanavir, amprenavir and indinavir. Contraceptive steroid levels are decreased by the nonnucleoside reverse transcriptase inhibitor nevirapine and increased by efavirenz. Amprenavir levels are decreased in women taking oral contraceptives (OCs). Little is known about the effect of OCs on other antiretroviral agents [9].

3. HIV-infected women should seek contraceptive methods that place them at low risk for acquiring sexually transmitted diseases (STDs), as STDs have worse sequelae in immunocompromised patients. HIV-infected women should seek methods that do not increase their risk of transmitting the HIV virus to their partners.

## 2. Contraceptive use

Few studies have investigated contraceptive use by HIV-infected women. The Women's Interagency HIV Study (WIHS) was established in 1993 to investigate the natural history of HIV infection in U.S. women. Of 1128 HIV-infected women who reported heterosexual activity within the prior 6 months, 85% were aged 25–45 years and they had an average of two children. The 782 contraceptive users used mostly condoms (86.6%) and were less likely to use OCs and intrauterine devices (IUDs) than 270 women without HIV infection. Oral contraceptive use was 7.3% and IUD use was 1.2% [10].

The Risk and Prevention Study of the HIV Cost and Services Utilization Study assessed 1421 HIV-infected individuals who had two study interviews between 1996 and 1998. The 278 women who had been heterosexually active in the prior 6 months were aged 20–50 years. Half of them met AIDS CD4 cell count criteria. Of the 89% who had used at least one contraceptive method, 78% used condoms. A third had a tubal ligation and 5% used OCs; other effective methods had little use reported [11].

HIV-infected individuals have relied on barrier methods for prevention of HIV and STD transmission. Condoms reduce HIV transmission risk by 80% [8]. However, male and female condoms are classified by the World Health Organization (WHO) only as somewhat effective contraceptives [12]. Condoms require partner cooperation and correct, consistent use to be effective for prevention of transmission and pregnancy. Thus, dual-method use is recommended.

HIV-infected women also often rely on OCs for birth control. OCs are considered effective contraceptive methods by the WHO [12]. However, OCs have drug interactions with HAART and offer no direct STD protection. OCs may have some effect on HIV-1 cervical shedding. Cervical HIV-1 viral shedding is associated with the presence of menses [13]. Since OCs cause a decrease

in menstrual blood loss, they should reduce the direct exposure of male partners to menstrual blood and HIV-1 virus. Kovacs et al. [14], in an analysis of 311 WIHS subjects, found no association between contraceptive use and HIV-1 shedding in genital secretions when comparing hormonal contraceptive users to nonusers and IUD users to nonusers. However, in the Mostad et al. study [15] of 318 HIV-infected Kenyan women, the 36 OC users were four times more likely than nonusers to shed HIV-1 DNA cervically. The clinical correlation of a possible increase in shedding is unknown.

## 3. IUD use

The IUD is categorized by the WHO as a very effective contraceptive method [12]. However, the IUD is infrequently used in the United States. The most recent contraceptive data from the 2002 National Survey of Family Growth (NSFG) reports that 5.8% of all reproductive-aged women have ever used an IUD, and only 1.3% were currently using it [16]. HIV status is not ascertained by the NSFG. Therefore, use of IUD by HIV-infected women in the United States is not known.

Common barriers to IUD use in HIV-infected women are similar to barriers in the general population and include misinformation, lack of clinician training and method availability. Barriers unique to IUD use in HIV-infected women are fears by providers that they may become infected during IUD insertion and that they may increase transmission of HIV acquisition of sexually transmitted infection by their patients. Questionnaires distributed to nurses, physicians and medical students in Zimbabwe, a country with 0.9% IUD prevalence [17], revealed that 65% to 80% thought the IUD was a good contraceptive method. However, only 19% to 38% of these groups had practical training in IUD insertion. One third of nurses believed that IUD insertion would put the clinician at higher risk for HIV acquisition. Most of these nurses had received practical training in IUDs. These same nurses were more likely to feel that IUD use should not be promoted because of undesirable side effects [18].

## 4. Safety

The safety of IUD use in HIV-infected women has been evaluated:

1. There are no known drug interactions between IUDs and HAART medications. Heikinheimo et al. [19] followed up 12 HIV-infected women in Finland for a year after levonorgestrel-releasing intrauterine system (LNG-IUS) insertion. Levels of levonorgestrel were similar for subjects with and without HAART. These levels decreased over the study period and were in the range expected for healthy LNG-IUS users.

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