

5. Contraception and STDs

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Introduction

In looking at the interaction between contraception and STDs, there are two fundamental issues that need to be addressed:

- Do contraceptive methods and practices affect the acquisition and natural history of STD and HIV infection?
- Does susceptibility to or presence of STDs affect contraceptive efficacy and choice?

A clear understanding of the interaction between STDs and contraception is essential in providing services for family planning and management of STDs. This is particularly important in a situation where both the contraceptive prevalence rate, as well as the prevalence of STDs, is on the rise. The interaction works both ways. It is clear that the use of condoms will provide some reduction in transmission of STDs. On the other hand, it also has been shown that the use of the IUD in the presence of cervical STDs may lead to PID. The presence of STDs or clients' susceptibility to STDs will influence choice, not only for individuals but also in programs. For example, where there are no diagnostic facilities for gonorrhea and chlamydia, and the prevalence of these organisms is sufficiently high, the provision of IUD services may put clients at increased risk.

The concept of safe sex is particularly relevant both to the control of STDs and the control of fertility. Safe sex should be seen as a means for prevention of unwanted pregnancy as well as the means for protection against STDs and HIV. Providing services for prevention and management of STDs within family planning settings is logical in that both these services serve to make sex safer.

Of particular concern to FP workers is that there is gender discrimination in the way STDs affect women. Transmission of STDs from men to women is more efficient because the vagina offers a larger surface area and there is a longer duration of contact with pathogens. In women STDs are frequently asymptomatic, the clinical symptoms are more subtle than in men and the clinical signs are less easily detectable. As a result of this there is delay in seeking care, leading to long-term complications that often are very serious.

Women generally seek care for their STD symptoms later than men. In a study by Moses et al (1994), 30 percent of women had STD symptoms for longer than 2 weeks before seeking health care, as opposed to 15 percent of men (see **Table 5-1**).

Table 5-1. Health Seeking Behavior and STDs

DURATION OF STD SYMPTOMS MORE THAN 2 WEEKS	
Males	15.5%
Females	30.5%
Odds Ratio	2.4 (1.4–4.1)

Source: Moses et al 1994.

Another area of concern is the fact that women tend to have sex while symptomatic more often than men. In the same study by Moses et al, 17.8 percent of women with STDs had sex three or more times while symptomatic, as compared to 2.3 percent of men (see **Table 5-2**). There are several possible reasons for this difference. It may be that these symptoms are not recognized as serious. Many women will ignore vaginal symptoms, as they have been taught to disregard all but the most serious. Another possible

explanation is that women may not have the power to deny sex even when they are not well. Whatever the reason, the combination of delayed treatment and unprotected intercourse is detrimental to the control of STDs. Only a very small proportion of these women reported using the condom, and only 5 percent of coital acts were protected by condoms.

Table 5-2. Sexual Activity in the Presence of STDs

	SEX ONCE WHILE SYMPTOMATIC	SEX 3+ TIMES WHILE SYMPTOMATIC
Males	12.1%	2.3%
Females	38.2%	17.8%
Odds Ratio	4.5	9.2
C.I.	2.5–8.2	3.0–23.8

Source: Moses et al 1994.

Efficacy of Condoms in Preventing STDs

Studies show a consistent and significant level of protection against STDs for men who use condoms. A comprehensive review of the literature on the subject is presented by Cates and Stone (1992a, 1992b). This protection has been demonstrated for gonorrhea, herpes, trichomonas, genital ulcers, chlamydia and HIV. These studies also show that women whose partners use condoms also have consistent and significant protection, but the level of protection is lower. It must be recognized, however, that the protection is not absolute. It is estimated that consistent condom use may prevent 60 to 79 percent of gonococcal and chlamydia infections.

There are a number of reasons why condoms sometimes fail to protect against STDs:

- Non use
 - Not available
 - Partner objects
 - Allergy (rarely)
- Incorrect use
- Slippage during coitus
- Breakage (see **Table 5-3**)
 - poor quality manufacture
 - poor storage
- Leakage

Table 5-3. Studies of Condoms Breakage in Developed Countries

AUTHOR AND YEAR PUBLISHED	BREAKAGE RATE
Richters et al 1988	0.5% (anal), 0.8% (vaginal)
van Griensven et al 1988	2–4%
Consumers Union 1989	1% (anal), 0.6% (vaginal)
Golombok, Sketchly and Rust 1989	3–5% (anal)
Tindall et al 1989	5–7% (anal)
Albert, Hatcher and Graves 1991	1%
Trussell, Warner and Hatcher 1992a	1.5–2.0%
Trussell, Warner and Hatcher 1992b	1.2–1.3%

Adapted from: Cates and Stone 1992a.

Perhaps the most important reason for the failure of condoms to provide protection from STDs is incorrect use. It is necessary for programs to train couples in the correct use of condoms and not just distribute them in the hope that they will be used properly. Given that condoms and other barrier methods are the only alternative to mutual monogamy in preventing the spread of STDs and HIV, it seems imperative that all FP programs provide consistent and repeated counseling on the proper use of condoms.

The use of condoms, however, is very low. Many men complain of loss of spontaneity, interference with the sex act and loss of sensation. The newer polyurethane condoms have several advantages that may make them more acceptable. They are thinner and therefore more sensitive. They are colorless and odorless. Polyurethane is stronger and less prone to breakage. In contrast to latex condoms, plastic condoms are loose fitting and more comfortable. Another advantage is that plastic condoms are compatible with oil-based lubricants, which will make a wider range of viricidal and spermicidal agents available for use. Finally, the production of these condoms is less dependent on natural products, and consequently costs will be reduced. Initial results indicate good acceptance of this product.

Spermicide

Studies show consistent and significant protection against STDs with the use of spermicides alone. Protection is not complete, however, and is much lower than with condoms alone. Regular use reduces cervical gonorrhea infection by 25 percent and cervical chlamydia by 22 percent. Nonoxynol 9 is the most commonly used spermicide. It acts as a non-ionic surfactant that damages the cell wall of STD pathogens and spermatozoa. Nonoxynol 9 has in vitro activity against:

- Gonorrhea
- Trichomonas
- Herpes simplex virus
- Treponema pallidum
- Ureaplasma
- HIV
- Chlamydia +/-

There is some concern that nonoxynol 9 may cause vaginal ulceration with repeated use. In a randomized controlled study of Nairobi prostitutes by Kreiss et al (1992), users of the contraceptive sponge impregnated with nonoxynol 9 were found to be at greater risk of genital ulceration and vulvitis (see **Table 5-4**). This problem has only been noted, however, in clients who have several repeated applications per day, such as prostitutes in whom this risk was first observed. There was no effect on seroconversion for HIV, although the rate of gonorrhea declined in users of the sponge.

Table 5-4. Risk of Infection among Nairobi Prostitutes Using Contraceptive Sponge with Nonoxynol 9

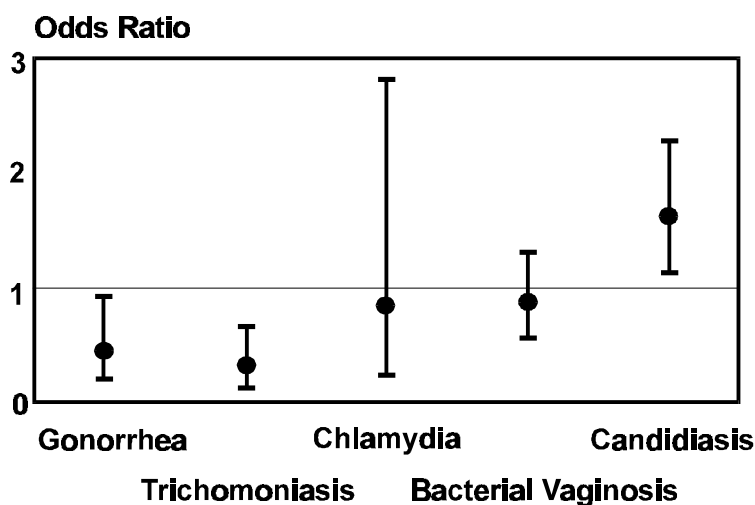
	RELATIVE RISK
Increased risk of genital ulcers	3.3
Increased risk of vulvitis	3.3
Reduced risk of cervical gonorrhoea	0.4
No effect on HIV seroconversion	1.7 (0.9–3.0)

Source: Kreiss et al 1992.

Female Dependent Barrier Methods

Many women are not in a position to negotiate the use of condoms by their partners. For these women, female dependent barrier methods offer some protection. Users of the diaphragm and sponge have lower rates of gonorrhoea and trichomoniasis, but higher rates of candidiasis, than women whose partners use the condom (Rosenberg et al 1992) (see **Figure 5-1**). In any case, most studies show a reduced risk of all of these STDs with use of female barrier methods, when compared with use of no barrier method. The female condom is under trials, and early results indicate that it is good in preventing pregnancy as well as STDs, but the thickness of the polyurethane reduces sensitivity, and the plastic makes noise during intercourse. These issues may reduce its acceptability. Also under testing is the vaginal contraceptive film, which has viricidal properties.

Figure 5-1. Risk of STDs for Users of Contraceptive Sponge and Diaphragm Versus Users of Condoms



Adapted from: Rosenberg et al 1992.

Hormonal Contraceptives

There are several postulated interactions between hormonal contraceptives and STDs. There is a possible increase in chlamydia infections, and this is primarily thought to be due to the large proportion of oral contraceptive (OC) users who have ectropion. On the other hand, OC users have a reduced prevalence of PID, primarily because there is thickening of the cervical mucus, decreased menstrual flow and reduced retrograde menstruation. There has been, however, greater concern about the possible increased risk of HIV in OC users.

Possible Mechanisms Influencing HIV Transmission in OC Users

There are several possible mechanisms that influence HIV transmission in OC users:

- Cervical ectropion common in puberty, pregnancy and OC use
- Chlamydia infection more common in ectropion, and intense inflammation response possibly predisposing to HIV infection
- altered menstrual patterns
- local effects of progesterone
 - thickening of cervical mucus is protective
 - thinning of endometrial epithelial surface increases risk

The influence of cervical ectropion on HIV acquisition is shown in **Table 5-5**. The first study (Moss et al 1991) shows a significant association, but a later study by Mati et al (1995) of a larger population shows no association between ectropion and HIV. Several other studies are now being conducted that will look at this association more critically, particularly the diagnosis of ectropion.

Table 5-5. Cervical Ectropion and HIV

AUTHOR	ODDS RATIO	C.I.
Moss et al 1991	5.0	1.7–14.7
Mati et al 1995	1.3	0.7–2.1

In a case control study, Plummer et al (1991) showed an increased risk of HIV (RR= 4.5 [1.4–13.8]) among Nairobi prostitutes on oral contraceptives. Several issues about the study were raised, however, in that past OC use was not verified, there was selection bias with differential LFU (lost to followup) and some of the analysis was inappropriate. Subsequent studies have shown mixed results, but recent prospective studies do not show any association.

Does the use of hormonal contraceptives increase the risk of acquiring HIV infection?

In recent cross sectional studies:

- three studies show significant association, with odds ratios ranging from 1.9 to 3.9
- two studies show no association (Kapiga et al 1994; Rehle et al 1992) (see **Table 5-6**)

In recent prospective studies (see **Table 5-7**):

- three studies show no association (Laga et al 1993; Saracco et al 1993; Sinei et al 1996)

Problems with these studies included:

- The relative timing of OC use and HIV infection was not known.
- Oral contraceptive use was not validated.
- Confounders were not carefully monitored.
- There were too few OC users.

On the strength of the three prospective studies, there is no need to change contraceptive practices. Results from larger, better controlled studies, however, are eagerly awaited.

Table 5-6. Injectable Contraceptive Use and HIV Infection: Cross-Sectional Studies Appearing 1992–1995

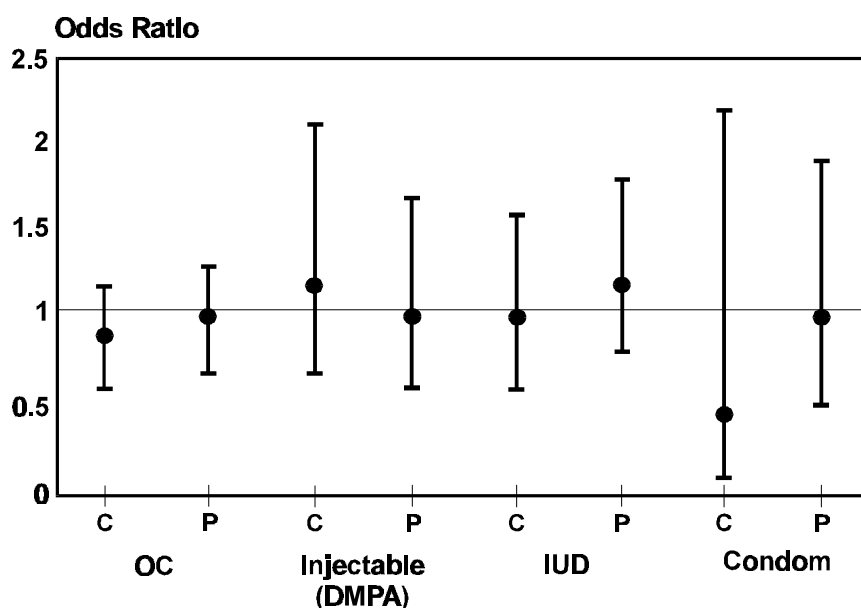
AUTHOR AND YEAR PUBLISHED	POPULATION, LOCATION	MEASURE OF USE	RELATIVE RISK	95% C.I.
Mati et al 1995	FP clinic attenders, Nairobi	Ever vs. not	1.4	0.9–2.1
Kapiga et al 1994	FP clinic attenders, Dar-es-Salaam	Ever vs. never; Current vs. never	1.8 2.1	0.8–4.2 0.9–4.8
Rehle et al 1992	Female sex workers, NE Thailand	Current vs. condoms, IUD or no method	2.9	1.0–7.9

Table 5-7. Oral Contraceptive Use and HIV Infection: Prospective Studies Appearing 1993–1996

AUTHOR AND YEAR PUBLISHED	POPULATION, LOCATION	MEASURE OF USE	RELATIVE RISK	95% C.I.
Laga et al 1993	Sex workers, Kinshasa	Ever vs. never	0.6	0.2–2.4
Saracco et al 1993	Female partners of HIV+ men, Italy	Current vs. not	0.0	
Mati et al 1995	FP clinic attenders, Nairobi	Current vs. not	0.8	0.4–1.8
Sinei et al 1996	FP clinic attenders, Nairobi	Use in last 6 months vs. not	3.5	0.8–21.5

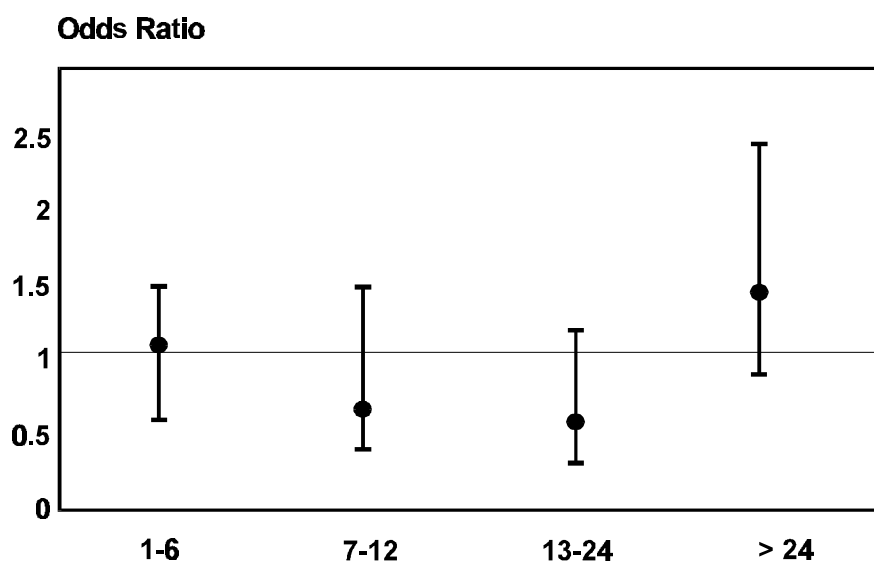
More reassuringly, a large cross sectional study by Mati et al (1995) involving 4404 women did not show any association between current and past use of OCs, DMPA or IUD and HIV serostatus (see **Figure 5-2**). The duration of OC use was tested against HIV serostatus, and no significant association was demonstrated with up to 24 months of use (see **Figure 5-3**).

Figure 5-2. Contraceptive Use and HIV-1 Serostatus: Current (C) and Previous (P) Use



Adapted from: Mati et al 1995.

Figure 5-3. Duration of Contraceptive Use and HIV-1 Serostatus: Oral Contraceptives by Months



Adapted from: Mati et al 1995.

Genital Ulcer Disease, OC Use and HIV

Data from Plourde (1992) show that genital ulcer disease (GUD) and OC use are both independently associated with HIV (see **Table 5-8**). For women who have used OCs for more than 12 months and who have GUD, the relative risk of HIV is 25, a very highly significant relationship.

Table 5-8. Risk Assessment for HIV: Study of 600 Women Attending STD Clinic

	ODDS RATIO	C.I.
GUD	11.8	2.8–4.0
OC Use > 12 Months	2.1	1.2–3.8
GUD and OC Use > 12 Months	25.7	5.5–90.7

Source: Plourde et al 1992.

Intrauterine Device

Early studies showed that the risk of PID was up to nine times greater among IUD users than among women using other methods (Senanayake and Kramer 1980). Problems with these studies include:

- The usual comparison groups were woman using pills or barriers, who have reduced risk of PID.
- Diagnosis of PID was usually syndromic and questionable, even with testing.
- The studies did not control for types of IUDs.

Recent studies (see **Table 5-9**) show a smaller risk of PID confined to the 2 to 3 weeks following insertion. Prophylactic antibiotics given at the time of insertion have not proven to be consistently useful in reducing risk. Given this, the use of the IUD must be preceded by an appropriate STD risk assessment and some form of STD screening.

Table 5-9. Studies of the Association Between the IUD and PID

AUTHOR AND YEAR PUBLISHED	COMPARISON GROUP	RELATIVE RISK	95% C.I.
Lee et al 1983	Women using no contraceptive, USA	1.9	1.5–2.4
Witoonpanich et al 1984	Parous women using no contraceptive, developing countries	2.3	1.4–3.9
Buchan et al 1990	Parous women using no contraceptive or relying on vasectomy, England		
	Non-medicated	3.3	2.3–5.0
	Medicated	1.8	0.8–4.0

Source: Cates and Stone 1992b.

Mati et al's 1995 study of 4404 women did not show any association between IUD use and HIV (see **Figure 5-2**).

Dual Methods

Regardless of the choice of contraceptive method, all clients at risk of STDs/HIV should be advised to use condoms.

The options are:

- abstinence,
- mutual monogamy,
- condom use with primary partner, or
- condom use with secondary partners.

The problem is that women may not be able to negotiate the use of condoms by their partner(s) and therefore it is necessary to give them alternatives. Possible alternatives:

- he uses condom and spermicide
- he uses condom, she uses vaginal spermicide
- he uses condoms without spermicide
- she uses diaphragm or female condom with vaginal spermicide
- she uses vaginal spermicide only

Conclusion

Given the increasing prevalence of STDs and HIV, it is important to find a method or combination of family planning methods that makes sex safe from unwanted pregnancy as well as STDs. Barrier methods of contraception have a major potential in reducing the spread of STDs/HIV. On the other hand, concerns about increased risk of STD/HIV infection with the use of hormonal methods is largely unfounded. In the absence of an ideal method that protects completely against STDs and pregnancy, the use of an effective method (pill, injectable or implant) with a barrier method (condom, diaphragm) offers the best protection.

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