

Outlook

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Contraceptive Methods in Focus: IUDs, Implants, and Oral Contraceptives

Worldwide, more than half of the 1 billion women of reproductive age (15–49) are using some form of contraception (see Figure 1, page 2). Nevertheless, in developing countries over 100 million women have an “unmet need” for contraceptives—commonly defined as an expressed desire to avoid or delay becoming pregnant—yet, due to a variety of barriers, they are not using contraception. The United Nations Population Fund (UNFPA) estimates that, between 2000 and 2015, demand for contraception will increase about 40 percent due to population growth coupled with an increase in the proportion of the population using contraception. UNFPA projects that by 2050 the total fertility in the 49 least-developed countries will decrease to 2.5 children per woman.¹

In developing countries, the proportion of couples using contraception has increased from 10 percent in the 1960s to approximately 60 percent today. Not all contraceptive users are alike and no single contraceptive method is perfect

for all. In order to increase contraceptive prevalence it is essential for family planning programs to ensure access to a wide range of methods. This allows women and men to choose the methods that best meet their needs for spacing or limiting births over the course of their reproductive years.

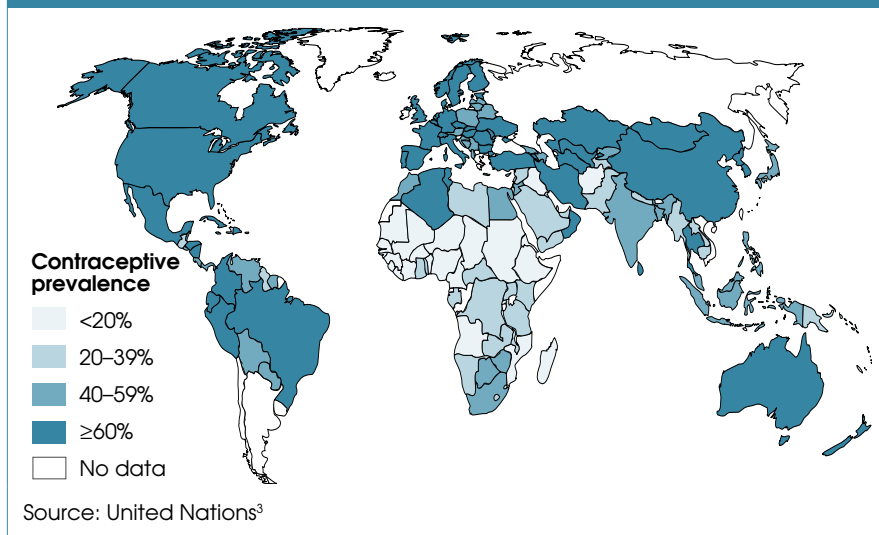
Even when contraceptive supplies are available in sufficient variety and number, barriers to use remain. These include quality of care and service, costs, accessibility (especially for marginalized groups), and the concerns and fears that surround the use of many contraceptives. Often influenced by outdated information or rumors, providers and clients may unnecessarily mistrust a particular contraceptive and therefore not consider it for use. Providers and counselors must have the most up-to-date information in order to best address their clients’ concerns (see text box on Georgia, page 2).

This *Outlook* article addresses trends, developments, and improvements in several key reversible methods of contraception—IUDs, hormonal implants, and contraceptive pills—and examines two new options: the hormonal contraceptive patch and vaginal ring. It complements *Outlook*, vol. 20, no. 2 (February 2003), which discussed female barrier methods for contraception and HIV prevention. Male and female condoms, critical components in the intersection of family planning and HIV prevention programs, will be covered in an upcoming issue of *Outlook*, as will voluntary sterilization.

Trends in contraceptive use: method mix is key

The most commonly used form of contraception worldwide is female sterilization. The next most popular methods in developing regions are the intrauterine device (IUD) and oral contraceptives (see Figure 2, page 3). The availability and use of contraceptives vary widely by region and by country, however. For example, women in sub-Saharan Africa are more likely to rely on oral contraceptives or traditional methods than their counterparts in Latin America and Asia. In Asia, IUDs account for a greater proportion of contraceptive use than in Latin America; sterilization is commonly used in both regions.²

Figure 1. Percentage of women of reproductive age currently using contraception, 2003.



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An appropriate mix of affordable, safe, and effective contraceptive methods is one that includes short- and long-term methods that meet the needs of women and men throughout their reproductive years. Increasing contraceptive method choice is a critical component of quality family planning programs. Contraceptive availability and choice are strongly associated with use, increased continuation rates, and total contraceptive prevalence.⁴ Each

method introduced into the method mix attracts a segment of the population, including couples not using the already available methods.

IUDs: underutilized in many countries

Research provides clear evidence that the IUD is a highly effective and safe option for medium- to long-term contraception. Yet its acceptability to clients and providers varies substan-

tially by country. Broadly disseminating evidence on safety and effectiveness can help alleviate provider and client concerns about IUDs and increase access to this underutilized method.

There are a variety of IUDs available throughout the world, including inert devices, copper-bearing IUDs, and progestogen-releasing systems (see section on Mirena, page 3). Medical experts no longer recommend use of inert IUDs, although they suggest that if current users are satisfied with the method, there is no need to have it removed.⁵ They also advise that older copper-bearing devices, such as Copper T200 and Copper 7, no longer be used. There are a large number of copper-bearing IUDs available internationally; the Copper T380A (also known as TCU380A or the Copper-T) is the most effective and most widely used worldwide.⁵ In a long-term, randomized trial, the TCU380A had a cumulative pregnancy rate of 2.2 per 100 women after 12 years of use. Failure rates in the first year of use typically are below 1 percent.⁵ The pregnancy rates experienced with the TCU380A are at least as low as pregnancy rates among sterilized women in the United States,^{6,7} making IUDs a very effective, long-term reversible option for women.

Care for Each Other: improving reproductive health services in Georgia

Programs seeking to reduce unmet need for contraceptives must address both providers and clients to improve the quality of reproductive health services. Johns Hopkins University/Center for Communications Programs (JHU/CCP) began one such effort in Georgia in 2000 with the Care for Each Other campaign.⁸

Like many countries in Eastern Europe and Eurasia after the dissolution of the Soviet Union, Georgia had a low birth rate, a low rate of contraceptive use, and a high rate of abortion. Lack of information, poor quality of products, and unreliable availability kept the demand for modern contraceptive methods low. Provider bias and widespread client fears about the side effects of hormonal contraceptives added to the preference for abortion over routine contraceptive use.

Care for Each Other's objectives included increasing the use of reproductive health facilities for family planning and the demand for modern contraceptive methods. Specialists offered providers training in service delivery and family planning counseling as well as updates on contraceptive technology. The campaign produced informational materials for both clients and providers on women's health, family planning, and sexually transmitted infections (STIs). Along with media promotion, Care for Each Other used its logo on posters, clinic signs, and pins to identify providers and sites offering the updated services. Finally, the program set up a hotline so that all Georgian women, including those who could not meet with a service provider, would have the information necessary to help them make decisions about contraceptives.

An evaluation survey revealed the progress made during the three-year campaign in Georgia. Modern contraceptive use among married women in Tbilisi increased from 25 percent in 2000 to 37 percent in 2002. At the same time, the abortion rate for the same group declined from 45 percent to 28 percent. In addition, clinic attendance rose sixfold, indicating an increase in clients' awareness of reproductive health services and confidence in the providers' skills.

Most women can use IUDs

The World Health Organization's (WHO) Medical Eligibility Criteria for Contraceptive Use advises that the copper-bearing IUD is a safe choice for a wide variety of women and under many conditions.⁹ Women for whom hormonal methods are not recommended—women who smoke, have high blood pressure or diabetes, or are breastfeeding—can safely use the copper-bearing IUD. Insertion of the device can be done safely postpartum, postabortion, or in breastfeeding women. In addition, IUDs can generally be used by nulliparous women and women less than 20 years of age, with no adverse effects on future fertility,^{10–12} although the risk of expulsion is increased among these women. Finally, the relatively common practice of restricting insertion until a woman has her menses is not necessary assuming it is known she is not pregnant. Tools, such as Family Health International's provider checklist, can help providers assess clients' pregnancy risk.¹³

Barriers to IUD use

Why does use of IUDs lag behind that of other methods in many countries? Barriers to IUD use include client and provider bias on IUD safety; a limited number of appropriately trained providers who are confident in IUD insertion skills; limited access to sterile supplies; concerns about the links between IUD use and STI/HIV acquisition; and costs, especially in terms of time and effort, for providers to insert an IUD. For programs and clients, upfront costs can present a major barrier in some settings.¹⁴ For example, in Kenya, a woman living in an urban area may pay as much as 100–200 shillings (US\$1.28–2.56) for an IUD insertion, compared with 10–50 shillings for a packet of contraceptive pills or a Depo-Provera injection. Starting about one year after the initial visit, however, the cumulative annual costs of pills and injections far exceed the one-time cost of IUD insertion, making the IUD one of the most cost-effective contraceptive methods available.¹⁵

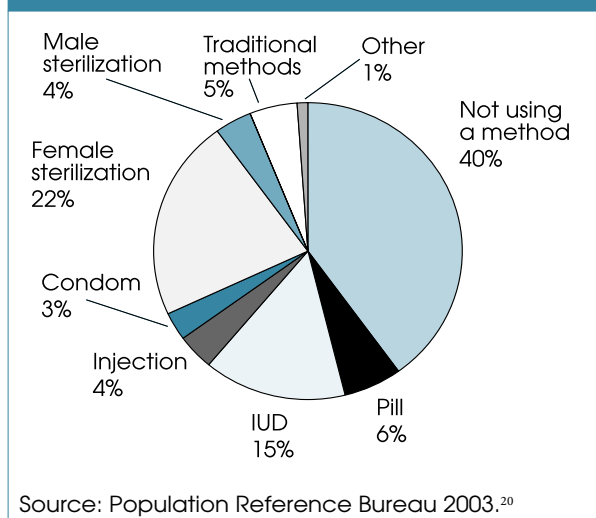
Fears. Despite approximately 15 years of evidence that IUDs are safe, provider bias, safety concerns, and client fears remain common. Some concerns about potential side effects, such as increased bleeding and cramping, are based on accurate information. Others are not, such as fears that the IUD can migrate outside of the uterus; can cause cancer, infertility, or even death; and in cases of pregnancy, can become lodged in the body of the infant.^{16–18}

Another misperception is that IUDs work by preventing implantation of a fertilized egg; the majority of research suggests, in fact, that the main mechanism of action for IUDs is through preventing fertilization. Counseling can ease or give context to these concerns by offering accurate information that allows clients to reassess risks.

Side effects. The main disadvantage of the copper-bearing IUD is the increased incidence of prolonged or heavy menstrual bleeding and cramping, and mid-cycle spotting. These side effects generally decrease after the first several months of use. Another consideration is the potential for unexpected expulsion of the IUD, which is generally highest among young or nulliparous women during the first few months of use. New designs of smaller IUDs specifically for nulliparous women are being evaluated.¹⁹ Finally, concerns still exist about the association of IUDs and pelvic inflammatory disease (PID), even though the evidence suggests no additional risk (see sidebar, page 4).

Previously, IUD use was not recommended for women infected with HIV.⁹ Data from a study in Kenya, however, suggest that HIV-infected women may safely use IUDs without increased frequency or severity of complications.²¹

Figure 2. Contraceptive use among married women in developing countries, late 1990s.



Likewise, recently revised WHO guidelines state that HIV-infected women generally can use IUDs if the infection has not progressed to AIDS. Women with AIDS currently using an IUD generally can continue to use it, although IUD insertion is usually not recommended for women with AIDS who are not under treatment (unless other methods are not available or appropriate).⁹ Further research is necessary to confirm the IUD's long-term safety when used by HIV-infected women.¹¹

Levonorgestrel-releasing IUD (Mirena)

The levonorgestrel-releasing intrauterine system (LNg-IUS), commonly known by its brand name Mirena, is even more effective than the TCu 380A, providing a level of effectiveness equal to or surpassing Norplant implants and sterilization. The pregnancy rate using Mirena is reported at 0.1 per 100 woman-years at one year with a cumulative rate of 0.7 per 100 women after 5 years of use. Mirena is approved for 5 years of use, but studies suggest that it could be effective up to 7 years.²² It is currently available in more than 50 countries.

Rates of adverse events such as PID and expulsion associated with Mirena

are low and comparable to, if not lower than, rates reported for TCu380A use. Many women experience some spotting or intermenstrual bleeding in the first months after insertion of the IUD; this side effect tends to dissipate over time.²³ Overall, the continuous release of progestin markedly reduces blood loss and menstrual pain compared with the TCu380A.

In a study of 160 women using Mirena, 89 experienced amenorrhea (little bleeding or lack of menses) at some point during 36 months of use; 75 of these women experienced complete cessation of their menses from the time of insertion.²³ Amenorrhea can cause women to worry that the method has failed and that they might be pregnant. Appropriate counseling about the menstrual irregularities and amenorrhea associated with Mirena could increase user acceptance, continuation, and satisfaction with the method, as well as alleviate concerns about method failure.²⁴

Contraceptive implants: increased options

Almost 15 years have passed since the U.S. Food and Drug Administration first approved the Norplant contraceptive implant. Today there are at least five contraceptive implants available or under development (see Table 1, page 5). All use a similar mechanism: a continuous dose of a synthetic progestogen is released from one or more small tubes that are placed under the skin of a woman's arm. The implants are made of silicon or plastic. They may remain effective for as long as seven years depending on their configuration. Since implants contain progestogen only, they have broader medical eligibility criteria than combined estrogen/progestogen hormonal contraceptives. There are very few conditions for which the use of progestogen-only contraceptives—including implants, Depo Provera and Net-En injectables, and progestogen-only pills—is restricted.

Norplant, a six-capsule implant approved for five years of use, is extremely effective at preventing pregnancy (0.1 pregnancies per 100 women during the first year of use). Studies found its effectiveness comparable to sterilization and copper-bearing IUDs and reported little risk of major health events.²⁹ Even though Norplant was introduced with considerable care, it received early criticism for programmatic difficulties in the introduction, insertion, and removal of the device. Provider training, infection prevention, and counseling on side effects all improve the quality of implant service delivery. Norplant's successor, Jadelle, is a two-rod system designed to provide equal contraceptive effectiveness (for up to five years) but be easier and faster to insert and remove. A third implant, Implanon, is a single-rod device approved for three years of use. The available evidence suggests that it is just as safe and effective as the other implants on the market. Implanon's thin, single rod is inserted with a special applicator. This technique differs from Norplant and Jadelle, so family planning programs switching from one system to another will need additional provider training to ensure quality service delivery.

Nestorone is a single-rod implant that releases the synthetic hormone nestorone, currently under development by the Population Council. The U.S. FDA has not yet approved nestorone, but trials indicate that that is safe and effective for use as a contraceptive for up to two years.³⁰ Preliminary evidence shows the progestogen nestorone is an inactive steroid when ingested orally. Thus its suitability as a contraceptive for breastfeeding women is under evaluation. Norplant, Jadelle, and Implanon contain steroids that remain active when ingested by an infant and may have negative effects on infant growth and development.³¹

Elcometrine is a single, nestorone-filled capsule that was registered for use in Brazil in 1998 by the South to South Cooperation in Reproductive Health. As with Nestorone, studies are being

IUDs and pelvic inflammatory disease (PID)

Over the years, data from observational studies have reported an association between IUD insertion and PID. Further analysis, however, reveals that these studies typically suffered from inappropriate comparison groups, weak diagnostic standards, and other confounding factors that have led to incorrect estimates of the risk of PID associated with IUD use.¹² In contrast, data from randomized controlled trials comparing various types of IUDs are very reassuring. An analysis of 12 randomized trials comparing various IUDs that collected data on 22,908 IUD insertions and 51,399 woman-years of follow-up showed the rate of PID among all IUD users was 1.6 cases per 1,000 woman-years of use. Furthermore, the risk of developing PID appears highest in the first 20 days after insertion and then decreases and remains consistently low—a comparable level to that of the general population—for up to 8 years.²⁵

Any woman with gonorrhea or chlamydia is at an increased risk of developing PID. Researchers have questioned whether inserting an IUD when a cervical infection is present could increase the risk of PID by introducing the infection into the uterus.²⁶ In fact, the risk of PID attributable to IUD insertion is as low as 0.15 percent.²⁷ A recent shift in WHO's guidance for medical eligibility criteria suggests that even in settings where STI prevalence is high, IUDs generally can be recommended for most women except those with "very high individual risk of exposure" to gonorrhea and chlamydia.⁹

Finally, researchers also have examined the use of prophylactic antibiotics at the time of IUD insertion as a method to reduce the risk of PID. In general, the use of prophylactic antibiotics for IUD users has not proven cost-effective. The risk of PID is so low that the prophylactic use of antibiotics is neither needed nor justified.²⁸

conducted to determine its potential as a safe contraceptive for nursing mothers.³²

Barriers to implant use

Aside from the cost of product and service delivery, which can be a significant barrier, many potential users have concerns about the consequences of using implants. Some of these worries are the product of rumor and misperception; others are based on real side effects. In assessing particular clients' needs, providers must accurately describe the safety and effectiveness of a contraceptive, including side effects and potential complications.

Women considering implants may worry about difficulty with removal, slow return to fertility, and abnormal periods.^{33,34} In the first instance, difficulty during Norplant removal is often linked to improper insertion or lack of adequate provider training. Newer models that use fewer rods or capsules make both insertion and removal easier. Although removing an implant is a little more difficult than inserting it, trained

providers can remove it whenever the client wants. Ensuring that clients have access to providers trained to remove implants upon request is crucial to acceptance of the method.

Clients who are worried about how soon they can become pregnant after using an implant can be reassured that fertility returns immediately for most women. Normal menses occurs in as soon as one month's time; sometimes it is delayed a little longer. For women wishing to avoid pregnancy, alternative contraception is needed immediately after removing the implants.³⁵

The third issue—the one that causes the most concern for some implant clients—is the irregular bleeding patterns many users experience (common among users of all progestin-only contraceptive methods). Women using Norplant and Jadelle frequently report heavy, prolonged, or irregular menstrual bleeding during the first year of use. These problems tend to diminish with use, and studies suggest that the total monthly blood loss is usually no greater than the amount

lost during normal menstruation. Nonetheless, bleeding problems were cited by 13.7 percent of women who discontinued using Norplant during a five-year postmarketing study.²⁹

Implanon, on the other hand, is more often associated with amenorrhea or infrequent bleeding.³⁵ Research suggests that as many as 50 percent of Implanon users experience infrequent menses or amenorrhea during the first three months.³⁶ Irregular or prolonged menstrual bleeding can cause disruptions in women's lives, especially in cultures that prohibit women from social and religious interactions during their menses and where hygiene during menses is a challenge. For this reason, amenorrhea tends to be better tolerated than irregular or prolonged bleeding.³⁷ Counseling during the initial visit is crucial to a client's ability to make an informed choice of method.

Combined oral contraceptives

Combined oral contraceptive (COC) pills have been on the market inter-

Table 1. Contraceptive implants

Device (Developer)	Design	Hormone	Effectiveness duration	Availability	Comments
Norplant (Population Council)	6 capsules	Levonorgestrel	Approved by U.S. FDA for 5 years	More than 60 countries	Currently used by about six million women. Research shows effectiveness up to 7 years.
Jadelle (Population Council)	2 rods	Levonorgestrel	Approved for 5 years in 11 countries; approved for 3 years in Indonesia and Thailand ³⁸	13 countries; registration in 30 more ³²	Easier to insert and remove than Norplant (2 rods instead of 6 capsules).
Implanon (Organon)	1 rod	Etonogestrel	Approved by U.S. FDA for 3 years	More than 40 countries	Inserted through a special applicator (additional provider training may be required).
Nestorone (Population Council)	1 rod	Nestorone	Research indicates 2 years ²⁹	Under development	Research is ongoing to determine if Nestorone could be used by women who are breastfeeding.
Elcometrine (South to South Cooperation in Reproductive Health)	1 capsule	Nestorone	Research indicates 6 months ³²	Brazil	Also being investigated for use by women who are breastfeeding (see above).

Note: Variations on Norplant and Jadelle are manufactured and marketed in China as Sino-implant Domestic No. 1 and Sino-implant Domestic No. 2, respectively.³²

Source: Adapted from WHO 2003.³⁹

nationally for some 40 years. The COCs that are now distributed in most countries contain lower hormonal doses than earlier, high-dose pills, yet are equally effective and have fewer contraindications and side effects. When taken consistently and correctly (at the same time every day), they have a failure rate of less than 1 percent in the first year. As typically used, the failure rate increases to 6–8 percent in the first year. Pregnancies due to inconsistent or incorrect use of the pill remain a problem. Women choosing COCs must be thoroughly counseled on how to use them correctly.

The risk of stroke and heart attack is greatly reduced with low-dose COCs (compared with the earlier high-dose pills). Nonetheless, their use is contraindicated in women who smoke and are over 35 years old, have high blood pressure or diabetes, have an unexplained history of venous thrombosis (blood clotting), or are breastfeeding.

Women for whom COC use is appropriate also may choose combined injectable contraceptives such as Cyclofem and Mesigyna (which, like COCs, include both estrogen and progestin). They have similar contraindications to COCs but may have reduced side effects.⁹ Combined injectables are administered once a month, which reduces the risk of non-compliance associated with remembering a daily pill.

Fears, side effects, risks, and benefits

Despite the improvement in oral contraceptives, myths and fears about their use abound. Women may worry that the COCs cause birth defects, breast cancer, or other cancers. Providers can reassure clients that low-dose COCs do not cause birth defects nor do they increase the long-

term risk of breast cancer. For women with persistent human papillomavirus (HPV) infections, it does appear that long-term COC use contributes to an increased risk of developing cervical cancer (though the number of cervical cancers that result from long-term COC use is thought to be very small).⁴⁰

Other common concerns are that

COC use can lead to infertility, that the hormones build up in a woman's body, or that a woman should "take a rest" from contraceptive pills periodically. Research shows that none of the concerns are real risks.

Fertility returns

shortly after discontinuing COCs; ovulation typically resumes within a week or two. The hormones in COCs do not build up in healthy women who are free of kidney and liver disease. "Taking a rest" was recommended in the 1960s, when hormonal methods were first introduced. There are no benefits for health or fertility, however, and the risk of unintentional pregnancy increases significantly.^{41–43}

Clients should be counseled about the real side effects from taking COCs: occasional breakthrough bleeding between periods (especially during the first three months or when one or more pills are missed accidentally), breast tenderness, and, infrequently, nausea (also during the first few months of use). Providers should also advise women about the risks. Even with the low-dose, standard formulation pills, users have a threefold greater risk of the formation of blood clots than non-users. The occurrence of blood clots is very rare, however, and so the absolute risk is minimal. In making contraceptive decisions, clients also should be aware of the non-contraceptive benefits that COC use provides. These include reduced incidence of noncancerous

breast cysts, fewer menstrual disorders, and protection against ectopic pregnancies, ovarian and endometrial cancer, and iron-deficiency anemia.

Extended-cycle oral contraceptives

In September 2003, the U.S. FDA approved Seasonale, an extended-cycle regimen of oral contraceptive pills. It was developed for those women who prefer less frequent menstruation (for convenience or for reduction in pain and discomfort). The hormones in Seasonale (levonorgestrel and ethinyl estradiol) are not new, but the new regimen allows women to take the pills for 84 consecutive days followed by 7 days of inactive pills. Thus women reduce the number of menstrual cycles from once a month to once every three months. Data from a clinical trial indicate that during the initial 84-day cycle, women experience more breakthrough bleeding than women on the 28-day cycle. This breakthrough bleeding decreased with each additional cycle, until its level was comparable to that of the standard COC regimen.⁴⁴

New options in hormonal contraception

Researchers continue to work on new hormonal contraceptive formulations and delivery systems to improve ease of use for women. Described below are two highly effective methods. They have the same contraindications as other combined hormonal methods.

Contraceptive ring

In October 2001, Organon International received U.S. FDA approval for NuvaRing—a contraceptive vaginal ring that continuously releases a combination of low-dose estrogen and progestin. The thin, flexible ring is inserted into the vagina for three weeks at a time and then discarded. A new ring is inserted one week later—regular menstrual bleeding typically occurs during the ring-free week. Although no randomized clinical trials have been conducted, a large multicenter study of the contraceptive ring found its safety

None of the contraceptive methods discussed in this article provide protection against STI/HIV infection.

and effectiveness were comparable to that of COCs. Introduced primarily in Europe, NuvaRing is currently available in 11 countries and costs US\$30–35.

The ring's advantage is its ease of use. Insertion and removal are not provider dependent and, once inserted, the ring does not require daily attention. The most common adverse events reported by women using the ring in the first year were headache (5.8%),



Source: NuvaRing website.
www.nuvaring.com.

vaginitis (5.6%), vaginal discharge (4.8%), and product-related effects such as expulsion or feeling the ring during intercourse (4.4%). Overall, 15.1 percent of women discontinued use due to these and other side effects.⁴⁵

Transdermal patch

A new form of hormonal contraceptive offers women convenient, once-a-week dosing that health experts anticipate will reduce client errors such as forgetting to take COCs every day. The contraceptive patch, manufactured under the name OrthoEvra (Ortho-McNeil Pharmaceuticals) is a small, thin, adhesive plastic square that a woman applies weekly to her arm, shoulder, torso, abdomen, or buttock. It continuously releases low-doses of estrogen and progesterin through the skin and into the bloodstream for seven days, after which the woman removes the patch and replaces it with a new one. A woman applies a patch each week for three consecutive weeks in the cycle. During the fourth, patch-free week, she has her menses.



Source: OrthoEvra website.
www.orthoevra.com.

Randomized trials comparing the patch to COCs found they have similar efficacy rates.⁴⁶ Women using the patch

had more self-reported compliance than women using COCs, likely due to increased ease of use.^{46,47} In early cycles of patch use, women had more intermenstrual bleeding and spotting than COC users, although this difference dissipated by the third cycle. They also experienced more headaches, breast tenderness, and dysmenorrhea than the COC group. Skin irritation around the site of patch placement was reported by 20 percent of women but only 2.6 percent of women who discontinued use reported skin irritation as the reason.⁴⁶ The cost of the patch (about US\$36) is not yet subsidized for the public sector, placing it, like the ring, out of reach for many women in developing countries.

Conclusion

Fundamental contraceptive mechanisms available have changed little in the past decades. Researchers have focused on reducing side effects and improving method delivery systems so that new contraceptive methods are more convenient and acceptable to both clients and providers. Research on long-term reversible contraceptives—such as the copper-bearing and levonorgestrel-releasing IUDs and new generations of implants—has led to methods that provide clients with highly effective protection. Developments in implants, in particular, have improved insertion techniques, and thus increased safety for clients and efficiency for providers. Newer contraceptives, such as the contraceptive patch and ring, are designed to increase effectiveness, compliance, and continuation by offering clients methods that are less provider-dependent and that do not rely on daily regimens of pills. These changes expand the contraceptive method mix, adding more choices for women and men who wish to limit or space pregnancies.

Not everyone currently benefits from these new advances. Considerable financial, geographic, and service delivery barriers often limit the supply

of and access to new contraceptive methods in developing countries. Concerted efforts are needed to increase availability of methods as well as to ensure that clients and providers have clear, accurate, and timely information on safety and effectiveness of both new and old products. Continued support from the international development community is crucial to guaranteeing that couples worldwide will benefit from ongoing research and development in contraceptive methods.

References

1. UN Population Division. Demographic prospects 2000–2050 according to the 2002 revision of the United Nations populations projections. *Population and Development Review*. 2003;29(10):139–145.
2. Bongaarts J, Johansson E. Future trends in contraceptive prevalence and method mix in the developing world. *Studies in Family Planning*. 2002;33(1):24–36.
3. United Nations (UN). *World Contraceptive Use 2003* [wall chart]. Sales No. E.04.XIII.20. New York: UN; 2004.
4. Ross J, Hardee K, Mumford E, Eid S. Contraceptive method choice in developing countries. *International Family Planning Perspectives*. 2002;28(1):32–40.
5. International Planned Parenthood Federation (IPPF). *IMAP Statement on Intrauterine Devices*. London: IPPF; 2003.
6. Skegg DC. Safety and efficacy of fertility-regulating methods: a decade of research. *Bulletin of the World Health Organization*. 1999;77(9):713–721.
7. Peterson HB, Xia Z, Hughes JM, Wilcox LS, Tylor LR, Trussell J. The risk of pregnancy after tubal sterilization: findings from the U.S. Collaborative Review of Sterilization. *American Journal of Obstetrics and Gynecology*. 1996;88(2):246–250.
8. Johns Hopkins University/Center for Communication Programs. *Care for Each Other Campaign, Georgia, 1999–2002*. Final report. Baltimore, MD: JHU/CCP; 2003.
9. WHO. Summary of changes from the second edition. *Improving Access to Quality Care in Family Planning. Medical Eligibility Criteria for Contraceptive Use*. 3rd ed. Available at: www.who.int/reproductive-health/publications/MEC_3/changes_tables.html. Accessed April 2, 2004.
10. Hubacher D, Lara-Ricalde R, Taylor DJ, Guerra-Infante F, Guzman-Rodriguez R. Use of copper intrauterine devices and the risk of tubal infertility among nulligravid women. *New England Journal of Medicine*. 2001;345(8):561–567.
11. Rivera R, Best K. Current opinion: consensus statement on intrauterine contraception. *Contraception*. 2002;65(6):385–388.

12. Grimes DA. Intrauterine device and upper-genital-tract infection. *The Lancet*. 2000;356(9234):1013–1019.
13. Trussel J, Leveque JA, Koenig JD, et al. The economic value of contraception: a comparison of 15 methods. *American Journal of Public Health*. 1995;85(4):494–503.
14. Family Health International. *How to Be Reasonably Sure a Client Is Not Pregnant*. Research Triangle Park, NC: FHI; 2002. Available at: www.fhi.org/en/RH/Pubs/servdelivery/checklists/pregnancy/index.htm.
15. Kenya Ministry of Health, FHI, USAID. An extremely low-cost option. Nairobi: Kenya MOH; 2003. *A New Look at IUCDs*. IUCD Method Briefs, No. 3.
16. Katz KR, Johnson LM, Janowitz B, Miguel Carranza J. Reasons for the low level of IUD use in El Salvador. *International Family Planning Perspectives*. 2002;28(1):26–31.
17. Population Council. *Clients and Providers Need Better Support and Guidance on IUDs (Ghana and Guatemala)*. FRONTIERS Operations Research Summary, No. 32. Washington, DC: Population Council; 2003.
18. Intrauterine devices page. Reproductive Health Technologies Project website. Available at: <http://rhtp.org/iuds/iud.htm>. Accessed April 21, 2004.
19. Otero-Flores JB, Guerrero-Carreno FJ, Vasquez-Estrada LA. A comparative randomized study of three different IUDs in nulliparous Mexican women. *Contraception*. 2003;67(4):273–276.
20. Population Reference Bureau (PRB). *Family Planning Worldwide, 2002 Data Sheet*. Washington, DC: PRB. Available at: www.prb.org.
21. Morrison CS, Sekadde-Kigundu C, Sinei SK, Weiner DH, Kwok C, Kokonya D. Is the intrauterine device appropriate contraception for HIV-1-infected women? *British Journal of Obstetrics and Gynecology*. 2001;108:784–790.
22. Fortney JA, Feldblum PJ, Raymond EG. Intrauterine devices: the optimal long-term contraceptive method? *The Journal of Reproductive Medicine*. 1999;44(3):269–274.
23. Baldaszti E, Wimmer-Puchinger B, Loschke K. Acceptability of the long-term contraceptive levonorgestrel-releasing intrauterine system (Mirena®): a 3-year follow-up study. *Contraception*. 2003;67(2):87–91.
24. Diaz J, Bahamondes L, Monteiro I, Petta C, Hildalgo MM, Arce XE. Acceptability and performance of the levonorgestrel-releasing intrauterine system (Mirena®) in Campinas, Brazil. *Contraception*. 2000;62(2):59–61.
25. Farley TM, Rosenberg MJ, Rowe PJ, Chen JH, Meirik O. Intrauterine devices and pelvic inflammatory disease: an international perspective. *The Lancet*. 1992;339(8796):785–788.
26. Best K. IUD not recommended for increased STD risk. *Network*. 2000;20(1):12–15.
27. Shelton JD. Risk of clinical pelvic inflammatory disease attributable to an intrauterine device. *The Lancet*. 2001;357(9254):443.
28. Grimes DA, Schulz KF. Prophylactic antibiotics for intrauterine device insertion: a metaanalysis of the randomized controlled trials. *Contraception*. 1999;60(2):57–63.
29. Meirik O, Farley TM, Sivin I. Safety and efficacy of levonorgestrel implant, intrauterine device, and sterilization. *Obstetrics & Gynecology*. 2001;97(4):539–547.
30. Sivin I, Croxatto H, Bahamondes L, et al. Two-year performance of a Nestorone-releasing contraceptive implant: a three-center study of 300 women. *Contraception*. 2004;69(2):137–144.
31. Diaz S. Contraceptive implants and lactation. *Contraception*. 2002;65(1):39–46.
32. Croxatto HB. Progestin implants for female contraception. *Contraception*. 2002;65(1):15–19.
33. International Planned Parenthood Federation Africa Region. *Contraceptive Update: A Handbook for Health Workers*. Nairobi: IPPFAR; 1996.
34. Women and Aids Support Network. *Women's Health and HIV/AIDS: Contraception and HIV/AIDS*. Harare: WASN; 2001. Available at: www.wasn.org.zw.
35. Zheng SR, Zheng HM, Qian SZ, Sang GW, Kaper RF. A randomized multicenter study comparing the efficacy and bleeding pattern of a single-rod (Implanon®) and a six-capsule (Norplant®) hormonal contraceptive implant. *Contraception*. 1999;60(1):1–8.
36. Hickey M, d'Arcangues C. Vaginal bleeding disturbances and implantable contraceptives. *Contraception*. 2002;65(1):75–84.
37. Ortayli N. Users' perspectives on implantable contraceptives for women. *Contraception*. 2002;65(1):107–111.
38. Sivin I, Nash H, Waldman S. *Jadelle® Levonorgestrel Rod Implants: A Summary of Scientific Data and Lessons Learned from Programmatic Experience*. New York: Population Council; 2002.
39. WHO/RHR. Contraceptive implants come of age. *Progress in Reproductive Health Research*. 2003;61:1–8.
40. WHO. *Cervical Cancer, Oral Contraceptives and Parity*. Geneva: WHO; 2002. Available at: www.who.int/reproductive-health/cancers/cacxocs.en.html.
41. Association of Reproductive Health Professionals. *Myths About Oral Contraception*. Washington, DC: ARHP; 1998. Available at: www.arhp.org/healthcareproviders/onlinepublications.
42. Myths about oral contraceptives. *Contraception Report*. 2003;13(4):14. Available at: www.contraceptiononline.org/contrareport/pdfs/13_04.pdf.
43. FHI. Combined Oral Contraceptives (COCs) FAQs. Available at: www.fhi.org/en/RH/FAQs/index.htm. Accessed April 21, 2003.
44. Anderson FD, Hait H, the Seasonale-301 Study Group. A multicenter, randomized study of an extended cycle oral contraceptive. *Contraception*. 2003;68(2):89–96.
45. Dieben TO, Roumen FJ, Apter D. Efficacy, cycle control, and user acceptability of a novel combined contraceptive vaginal ring. *Obstetrics and Gynecology*. 2002;100(3):585–593.
46. Gallo MF, Grimes DA, Schulz KF. Skin patch and vaginal ring versus combined oral contraceptives for contraception. *Cochrane database of systematic reviews*. 2003;(1):CD003552.
47. Audet MC, Moreau M, Koltun WD, et al. Evaluation of contraceptive efficacy and cycle control of a transdermal contraceptive patch vs. an oral contraceptive: a randomized controlled trial. *JAMA*. 2001;285(18):2347–2354.

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