

Intrauterine Contraception

Today

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Note: This is the second of three issues.

The American College of Obstetricians and Gynecologists (ACOG) has endorsed intrauterine devices (IUDs) as a safe, effective, long-term method of contraception that should be considered for all women seeking an effective, reversible contraceptive.¹ The copper T 380A IUD and the levonorgestrel intrauterine system (LNG IUS) are the two IUDs currently approved by the US Food and Drug Administration (FDA). Both are safe and effective methods of contraception; each, however, has its own unique characteristics that should be considered in clinical decision making.

Efficacy rates, return to fertility

The copper T 380A IUD and the LNG IUS have been shown to be highly effective over the long-term. The copper T 380A IUD has a failure rate of 0.8% per year with typical use and a 10-year failure rate of 2%.^{2,3} Furthermore, in clinical studies, no additional pregnancies occurred in up to 11 to 12 years of copper T 380A IUD use.³ The LNG IUS has a failure rate of 0.1% per year with typical use and a 5-year failure rate of 0.71%.^{2,4} No additional pregnancies occurred in up to 7 years of LNG IUS use.²

Neither IUD increases the risk for infertility.¹ A recent analysis examined time to pregnancy, pregnancy outcome, and the need for infertility workup in a cohort of previous copper IUD users.⁵ Among women who had IUDs removed for purposes of pregnancy planning, 94% became pregnant, with most of these pregnancies occurring within 12 months. Moreover, there was no evidence that those who had IUDs removed due to complications were less able to become pregnant or to carry their pregnancies to term. (See accompanying commentary on this subject by David A. Grimes, MD.)

Setting the Stage

Nearly all (98%) US women ages 15 to 44 years who have had intercourse have used at least one method of contraception; most (62%) currently use a contraceptive method.¹ Still, nearly half of the 6.4 million annual pregnancies in the United States are unintended.²

Modern methods of contraception offer women enormous freedom in planning future pregnancies. Each presents its own advantages and disadvantages with regard to efficacy, ease of use, ability to protect against sexually transmitted diseases (STDs), accessibility, side effects, and duration of action.

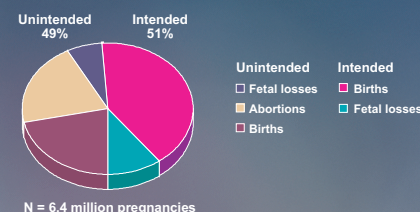
This newsletter series focuses on one form of long-term, reversible contraception: the intrauterine device. Other forms of this type of contraception include hormonal implants, the vaginal ring, and transdermal patch.

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Unintended Pregnancies in the United States

Data from 2002 National Survey of Family Growth



LEARNING OBJECTIVES

After studying the information presented in this newsletter, participants will be able to:

- Identify the patient populations appropriate for each of the two currently available intrauterine devices (IUDs)
- Characterize the mechanism of action for each IUD

TARGET AUDIENCE

This educational activity is designed for OB/GYNs, nurse practitioners in women's health, select primary care physicians, select physician assistants, office nurses, retail pharmacists, and managed care decision makers.

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Planning Committee

Raquel D. Arias, MD

Associate Professor
Obstetrics and Gynecology
University of Southern California
Keck School of Medicine
Los Angeles, California

Penelope M. Bosarge, RNC, MSN, CRNP

University of Alabama at Birmingham
School of Nursing
Birmingham, Alabama

David A. Grimes, MD

Clinical Professor
Department of Obstetrics and Gynecology
University of North Carolina School of Medicine
Chapel Hill, North Carolina

Andrew M. Kaunitz, MD

Professor and Assistant Chair
Department of Obstetrics and Gynecology
University of Florida College of Medicine
Jacksonville, Florida

Anne A. Moore, MSN, ANP, FAANP

Professor of Nursing and Chair, NPWH
Vanderbilt University School of Nursing
Nashville, Tennessee

Susan Rawlins, MS, RNC, WHNP

Faculty Associate, OB/GYN
UT Southwestern Medical Center
National Association of Nurse Practitioners
in Women's Health
Washington, District of Columbia

Suzy L. Reiter, NP, MSN

Vice President, Medical Services
Planned Parenthood
Grand Rapids, Michigan

Lee P. Shulman, MD

Professor and Chief
Division of Reproductive Genetics
Department of Obstetrics and Gynecology
Feinberg School of Medicine
Northwestern University
Chicago, Illinois

Carolyn M. Sutton, MS, WHNP

Faculty Associate, OB/GYN
UT Southwestern Medical Center
Dallas, Texas

Susan Wysocki, RNC, NP

President and CEO
National Association of Nurse Practitioners
in Women's Health
Washington, District of Columbia

PPS Staff Disclosures

Senior Medical Writer **Mark Palangio** and Editorial Director **Caroline Tredway** indicated no relevant financial relationships to disclose.

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Mechanisms of Action

Several mechanisms of action have been proposed for IUDs.^{1,6} The principal mode for both IUDs appears to be prevention of fertilization, although postfertilization effects may also occur with each. The copper T 380A IUD has a spermicidal action, mediated through a foreign body reaction in the uterus. The LNG IUS induces endometrial suppression and changes the amount and viscosity of cervical mucus.

Patient Populations Appropriate for Each IUD

According to WHO. The World Health Organization (WHO) has developed eligibility criteria for initiating use of IUDs in individuals with specific medical conditions based on clinical and epidemiological evidence.⁷ These criteria consider the copper T 380A IUD and the LNG IUS separately.

According to the WHO eligibility criteria, the copper T 380A can be used *without restriction* in women with obesity (BMI ≥ 30 kg/m²), multiple risk factors for cardiovascular disease, controlled or uncontrolled hypertension, ischemic heart disease, stroke history, diabetes, thrombotic mutations, current (or history of) deep vein thrombosis or pulmonary embolism, breast cancer, smoking, or migraine and nonmigraine headaches.

The copper T 380A can be used *without restriction* in individuals being treated with rifampicin, griseofulvin, other antibiotics, or certain anticonvulsants (eg, barbiturates, carbamazepine, oxcarbazepine, phenytoin, primidone, topiramate). Women who are clinically well on antiretroviral therapy can use the copper T 380A IUD, but *more than usual follow-up* may be needed. For those not clinically well on antiretroviral therapy, the copper T 380A IUD *should not be used unless* the clinician makes a clinical judgment that the patient can safely use this device.

The WHO eligibility criteria state that the LNG IUS can be used *without restriction* in individuals with obesity, controlled hypertension, uncontrolled stage 1 hypertension (140-159/90-99 mm Hg), smoking, or nonmigraine headaches. The LNG IUS can be used, but *with more than usual follow-up*, in women with multiple cardiovascular disease risk

The American College of Obstetricians and Gynecologists (ACOG) has endorsed intrauterine devices (IUDs) as a safe, effective, long-term method of contraception that should be considered for all women seeking an effective reversible contraceptive.

Currently Available IUDs

Copper T 380A (ParaGard®)

- T-shaped device with a polyethylene frame and 380 mm² of exposed copper surface area.
- Approved by the FDA in 1984; introduced to the market in 1988.
- Approved for up to 10 years of continuous use.
- Expanded patient profile allows use in nulliparous women and those not in mutually monogamous relationship; also, women with history of STDs or PID who do not have acute PID or engage in sexual behavior that increases their risk of PID.

LNG IUS (Mirena®)

- T-shaped polyethylene frame with a reservoir containing 52 mg of levonorgestrel; initial release of levonorgestrel into the uterine cavity is 20 µg/day.
- Approved by the FDA in 2000; has been used in Europe since 1990.
- Approved for up to 5 years of continuous use.

Audioconference Questions and Answers

The following questions were posed to David A. Grimes, MD, during one in a series of audioconferences entitled *Intrauterine Contraception Today*.

Q: Can you address IUD removal in a pregnant woman?

A: Yes. Keep in mind that the pregnancy occurs in the wall of the uterus, and in fact goes to the contralateral side. In contrast, the IUD is in the cavity and can be easily pulled out if the string is present. Sometimes you can tease the IUD out of the end of the cervical canal with a Cytobrush. The key is to remove the device early on, because as the pregnancy advances, the IUD is going to move up with the growing uterus, and thus be out of range. If the IUD stays in place, there is an increased risk of both miscarriage and premature delivery, probably related to local prostaglandin production in response to the IUD being present. So whether a woman decides to continue the pregnancy or have an abortion, it is important to remove the IUD.

Q: Is IUD insertion safe in a patient who has had a chlamydia infection?

A: Yes, if the infection has been properly treated. You should treat the infection first and insert the IUD at a later date. My choice is azithromycin for her and her partner. I don't feel that a woman should forever be banned from a very safe and effective method of contraception because she has encountered a sexually transmitted disease in the past.

Q: Is there any contraindication to IUD use with human papilloma virus infection?

A: No, not to my knowledge. There are two case-controlled studies that have looked at cervical cancer and IUD use. Both studies found a modest reduction in the risk of cervical cancer. Again, the evidence is not as compelling as for endometrial cancer. If anything, there will be a protective effect, so I don't have any concerns there.

factors, uncontrolled stage 2 hypertension ($\geq 160/100$ mm Hg), migraine headaches, past or current ischemic heart disease, stroke history, diabetes, thrombogenic mutations, or current (or history of) deep vein thrombosis or pulmonary embolism.

In individuals with current deep vein thrombosis or pulmonary embolism and in breast cancer survivors who have been free of cancer for 5 years, the LNG IUS *should not be used* unless the clinician makes a clinical judgment that the patient can safely use this device. Additionally, the LNG IUS *should not be used* in patients with current breast cancer. According to the package insert, LNG IUS use *is contraindicated* in women with known or suspected breast carcinoma because some of these are hormone-sensitive. Of note, none of these recommendations is evidence-based.

The WHO criteria *place no restriction* on the use of the LNG IUS with rifampicin, griseofulvin, other antibiotics, or certain anticonvulsants (eg, barbiturates, carbamazepine, oxcarbazepine, phenytoin, primidone, topiramate). The LNG IUS can be used in individuals who are clinically well on antiretroviral therapy, but *more than usual follow-up* may be required. For individuals not clinically well on antiretroviral therapy, the LNG IUS *should not be used* unless the clinician makes a clinical judgment that this device can be used safely.

According to ACOG. ACOG has determined that IUDs are appropriate with certain medical conditions, and has outlined these recommendations in its Practice Bulletin.¹ Limited data suggest that there are no increased complications with IUD use in individuals with diabetes. According to the ACOG recommendations, IUDs can be used in women with thromboembolism. The LNG IUS should be considered for women with bleeding disorders or those taking anticoagulants because it decreases menstrual bleeding. For women with heavy bleeding or dysmenorrhea, the LNG IUS should be considered. A recent Cochrane review found immediate postpartum insertion of copper IUDs to be safe and effective, although spontaneous expulsions were more common than after interval insertions.⁸ Consistent with the WHO recommendations, the ACOG guidelines only allow the use of the copper T 380A in women with breast cancer. The LNG IUS is not recommended for women with current liver disease.

The copper T 380A IUD has a failure rate of 0.8% per year with typical use and a 10-year failure rate of 2%. The LNG IUS has a failure rate of 0.1% per year with typical use and a 5-year failure rate of 0.71%.

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COMMENTARY

IUDs and Infertility: A Clean Bill of Health

Concern that IUDs may increase upper-genital tract infection—and thus infertility—has limited IUD use in the United States for 3 decades. Recent, high-quality research has lifted the cloud of suspicion, providing proof that contemporary IUDs are not associated with subsequent infertility.

The landmark Cramer¹ and Daling² studies, published in the *New England Journal of Medicine* in 1985 attracted international media attention. They reported that prior IUD use increased the risk of tubal infertility by a factor of 2- to 2.5-fold. That grim assessment dominated clinical practice for many years.

Because of the importance and scope of this issue, the World Health Organization (WHO), in the late 1980s, called for further research.³ Soon thereafter, two cohort studies from opposite sides of the globe provided reassuring news.^{4,5} Women in follow-up for several years after discontinuing IUD use because of problems (such as reported infection) had no significant increase in involuntary infertility compared with women who had their IUDs removed to become pregnant. A recent, similar study from Norway found no adverse effect on fertility subsequent to copper IUD use.⁶

The definitive study showed what had long been suspected: the reported association between IUD use and infertility in earlier studies was due to bias, not to biology. Hubacher and associates conducted a large case-controlled study in Mexico City.⁷ Cases involved nulligravid women with confirmed tubal infertility; the study used both pregnant and nonpregnant controls. A unique feature was the determination of chlamydia serology status for all cases and controls. Women who had used an IUD in the past had no increase in the risk of tubal infertility. In contrast, those who had been infected with *Chlamydia trachomatis* had a significant increase in risk. This suggested that earlier, less-sophisticated studies linking IUDs and infertility were biased due to the confounding effect of sexually transmitted infections. Bacteria, not plastic, were the culprits.

In light of this reassuring news, the WHO notes that while the literature is unsettled, recent, dependable studies suggest no increase in the risk of infertility after IUD use by nulliparous women.⁸ IUDs get a Category 2 rating for nulliparous women (benefits generally outweigh risks) and a Category 1 rating for parous women (no reservations). Based on solid evidence, IUDs today are having a renaissance in the United States.⁹

— David A. Grimes, MD

Dr Grimes has indicated relevant financial relationships as noted: speakers bureau for Berlex, Inc. and Duramed Pharmaceuticals, Inc.

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