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## Committee on Adolescent Health Care Long-Acting Reversible Contraception Working Group

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# Adolescents and Long-Acting Reversible Contraception: Implants and Intrauterine Devices

**ABSTRACT:** Long-acting reversible contraception (LARC)—intrauterine devices and the contraceptive implant—are safe and appropriate contraceptive methods for most women and adolescents. The LARC methods are top-tier contraceptives based on effectiveness, with pregnancy rates of less than 1% per year for perfect use and typical use. These contraceptives have the highest rates of satisfaction and continuation of all reversible contraceptives. Adolescents are at high risk of unintended pregnancy and may benefit from increased access to LARC methods.

## Sexual Behavior and Contraceptive Use Among American Adolescents

In the United States, 42% of adolescents aged 15–19 years have had sexual intercourse (1). Although almost all sexually active adolescents report having used some method of contraception during their lifetimes, they rarely select the most effective methods. Adolescents most commonly use contraceptive methods with relatively high typical use failure rates such as condoms, withdrawal, or oral contraceptive (OC) pills (1). Nonuse, inconsistent use, and use of methods with high typical use failure rates are reflected in the high rate of unintended adolescent pregnancies in the United States. Eighty-two percent of adolescent pregnancies are unplanned, accounting for one fifth of all unintended pregnancies in the United States, a statistic that indicates an unmet need for acceptable, reliable, and effective contraceptive methods for adolescents (2).

Long-acting reversible contraception (LARC) methods are increasing in popularity with use increasing from 2.4% of all U.S. women using contraception in 2002 to 8.5% in 2009 (3). Approximately 4.5% of women aged 15–19 years who are currently using a method of contraception use LARC, with most using an IUD (3). The etonogestrel single-rod contraceptive implant, approved by the U.S. Food and Drug Administration in 2006, is used by less than 1% of U.S. women using contraception and 0.5% of those aged 15–19 years (4).

Short-acting contraceptive methods, including condoms, OCs, the contraceptive patch, the vaginal ring, and

depot medroxyprogesterone acetate (DMPA) injections, are mainstays of adolescent contraceptive choices, but these contraceptives have lower continuation rates and higher pregnancy rates than LARC methods (5, 6). Of 1,387 females aged 15–24 years who initiated short-acting hormonal methods, only 11% using the contraceptive patch, 16% receiving DMPA injections, and approximately 30% using the vaginal ring and OCs were still using the same method after 12 months (6). In a study of 4,167 females aged 14–45 years that compared continuation rates for LARC and short-acting contraceptive methods, the continuation rate for LARC was 86% at 12 months compared with 55% for short-acting contraceptive methods (7). In this study, continuation rates for the levonorgestrel intrauterine system and the contraceptive implant in women younger than 20 years were similar to rates for older women at 85% and 80%, respectively, at 1 year. Copper IUD continuation rates were slightly lower for adolescents than for older women, but were still 72% at 1 year. In the same study population, unintended pregnancy rates for short-acting contraceptives were 22 times higher than unintended pregnancy rates for LARC. Women younger than 21 years using short-acting contraceptives had a risk of unintended pregnancy that was two times the risk among older women using short-acting contraceptives, but the risk was the same if they were using LARC (8). Poor continuation coupled with higher failure rates decrease the efficacy of short-acting contraception in young women.

Barriers to wide use of LARC methods by adolescents include a lack of familiarity with or misperceptions about the methods, the high cost, the lack of access, and health care providers' concerns about the safety of LARC use in adolescents (9–11). A large study that removed cost and other common barriers to LARC methods, and included counseling on the full range of birth control options, found that more than two thirds of females aged 14–20 years chose LARC methods (12).

### **Counseling, Consent, Confidentiality, and Cost**

Increasing adolescent access to LARC is a clinical and public health opportunity for obstetrician–gynecologists. With top-tier effectiveness, high rates of satisfaction and continuation, and no need for daily adherence, LARC methods should be first-line recommendations for all women and adolescents (13). As with all nonbarrier methods, to decrease the risk of sexually transmitted infections (STIs), including human immunodeficiency virus (HIV), health care providers should advise sexually active adolescents to consistently use condoms along with LARC methods.

Like all women seeking reproductive health services, adolescents have the right to decline the use of LARC as well as the right to discontinue LARC without barriers. Coercive insertion of long-acting contraception was used in the past as a means of fertility control in marginalized women (14). In the absence of contraindications, patient choice should be the principal factor in prescribing one method of contraception over another, and adolescents have the right to decline any method of contraception.

Confidentiality is of particular importance to adolescents. In many states, adolescents have the right to receive confidential contraceptive services without parental consent, and health care providers should be familiar with laws concerning provision of contraception to minors in their own states. Information regarding these laws can be found at: <http://www.guttmacher.org/statecenter/adolescents.html>.

High up-front costs for LARC methods can be a deterrent to use. Adolescents who have insurance coverage through their parents may not want to use the benefit because of confidentiality concerns; others may be uninsured or have insurance that excludes coverage for LARC methods. In all of these cases, referral to a publicly funded clinic may be appropriate. Proposed health care reform provisions to cover all FDA-approved contraceptive methods, including LARC methods, without copayments or deductibles for these preventive health services, may ease this burden.

### **Guidance for Adolescent Health Care Providers to Address Common Misconceptions**

Health care providers' concerns about LARC use by adolescents are a barrier to access. Health care provider train-

ing and continuing education programs should address common misconceptions and review the key evidence and benefits of adolescent LARC use.

### **Intrauterine Devices**

*Intrauterine devices are safe to use among adolescents.*

Current evidence demonstrates the safety of modern IUDs. Although few studies have focused exclusively on adolescents who use currently available IUDs, good evidence suggests that the relative risk of pelvic inflammatory disease (PID) is increased only in the first 20 days after IUD insertion and then returns to baseline, while the absolute risk remains small (15–17). Bacterial contamination associated with the insertion process is the likely cause of infection, not the IUD itself. The risk of PID with IUD placement is 0–2% when no cervical infection is present and 0–5% when insertion occurs with an undetected infection (17). Women with positive chlamydia cultures after IUD insertion are unlikely to develop PID, even with retention of the IUD, if the infection is promptly treated (18, 19). The levonorgestrel intrauterine system may lower the risk of PID by thickening cervical mucus and thinning the endometrium (20–22).

*Intrauterine devices do not increase an adolescent's risk of infertility.*

Infertility is not more likely after discontinuation of IUD use than after discontinuation of other reversible methods of contraception (16). In a large case–control study that examined determinants of tubal infertility, the presence of chlamydial antibodies, not previous IUD use, was associated with infertility (23). Baseline fecundity returns rapidly after IUD removal (24).

*Intrauterine devices may be inserted without technical difficulty in most adolescents and nulliparous women.*

Little evidence suggests that IUD insertion is technically more difficult in adolescents compared with older women. More than one half of young nulliparous women report discomfort with IUD insertion (21). Anticipatory guidance regarding pain and provision of analgesia during IUD insertion should be individualized and may include supportive care, nonsteroidal antiinflammatory drugs (NSAIDs), narcotics, anxiolytics, or paracervical blocks. The most effective method of pain control has not yet been established (25). Use of buccal or vaginal misoprostol 2–3 hours before IUD insertion to soften a nulliparous cervix does not appear to reduce insertion pain, and adverse effects are common (26–28).

*Adolescents should be routinely screened for STIs (eg, gonorrhea and chlamydia) at the time of IUD insertion.*

Women aged 15–19 years have the second highest rates of chlamydia and the highest rates of gonorrhea of any age group (29). Thus, all adolescents should be screened for STIs at the time of or before IUD insertion. It is reasonable to screen for STIs and place the IUD on the same day (and administer treatment if the test results are positive)

or when the test results are available. If an STI is diagnosed after the IUD is in place, it may be treated without removing the IUD (30–32). Routine antibiotic prophylaxis is not recommended before IUD insertion (33).

*Intrauterine device expulsion is uncommon in adolescents.*

Intrauterine device expulsion rates range from 3% to 5% for all IUD users and from 5% to 22% in adolescents (34, 35). Young age, previous IUD expulsion, and nulliparity may slightly increase the risk of expulsion, but research on current IUDs is limited (34–36). Prior expulsion should not be considered a contraindication for another IUD provided that appropriate counseling is given (36).

*Intrauterine devices cause changes in bleeding patterns.*

Adolescents using either copper IUDs or the levonorgestrel intrauterine system can expect changes in their menstrual bleeding especially in the first months of use. The copper IUD may cause heavier menses that can be treated with NSAIDs. Women using the levonorgestrel intrauterine system will have a decrease in bleeding over time that will lead to light bleeding, spotting, or amenorrhea. Health care providers should counsel adolescents so they understand that these changes are expected.

### **The Contraceptive Implant**

*The contraceptive implant causes changes in bleeding patterns.*

Adolescents who use the contraceptive implant can expect changes in menstrual bleeding patterns throughout the duration of use. In an analysis of 11 clinical trials, including 942 etonogestrel implant users of all ages, the most common bleeding pattern was infrequent bleeding in 33.3% of 90-day cycles, followed by amenorrhea in 21.4% of cycles. Prolonged bleeding occurred in 16.9% of cycles and frequent bleeding occurred in 6.1% of cycles (37). A change in bleeding pattern is the most common reason for implant discontinuation. Anticipatory guidance regarding bleeding patterns may improve satisfaction and continuation. The bleeding pattern women experience in the first 3 months is broadly predictive of future bleeding patterns (38).

Common strategies for treating problematic bleeding include the use of short courses of combined OCs or NSAIDs; however, there are no published placebo controlled trials to support the use of these treatments (39). Limited clinical trial data suggest that, compared with placebo, mefenamic acid, mifepristone in combination with ethinyl estradiol or doxycycline, and doxycycline alone decrease the length of bleeding episodes in implant users (40–42). More research is needed to determine whether these or other interventions affect long-term continuation or acceptability of the implant.

*The contraceptive implant has secondary health benefits.*

High rates of infrequent bleeding or amenorrhea lead to higher hemoglobin levels in etonogestrel implant users

(43). Other noncontraceptive benefits of the contraceptive implant include reductions in dysmenorrhea and pelvic pain (44, 45). A prospective study of etonogestrel implant users showed no difference in the change in bone mineral density compared with copper IUD users after 2 years of use (46).

*The contraceptive implant has minimal or no effect on weight.*

Currently, no prospective studies of weight in etonogestrel implant users have been published. A small percentage of women (2.3%) in the clinical trials for the etonogestrel implant discontinued use because of reported weight gain; however, actual weight gain was not documented (37). In contrast, DMPA injections are associated with weight gain, with overweight adolescents more susceptible to weight gain than normal weight adolescents (47).

## **Postpartum and Postabortal Long-Acting Reversible Contraception Initiation**

### **Postpartum Long-Acting Reversible Contraception**

Adolescent mothers are at high risk of rapid repeat pregnancy; 20% give birth again within 2 years (48). Insertion of an IUD or implant immediately postpartum ensures reliable contraception for adolescents when they are highly motivated to prevent pregnancy and are already in the health care system. The benefits of postpartum IUD insertion outweigh the risks, although recommendations vary depending on the type of device and timing of postpartum insertion (see Table 1) (31). Although the risk of expulsion is higher for immediate insertion compared with delayed insertion, if a delayed insertion presents a significant barrier, immediate insertion should be offered (49). Of adolescents in the postpartum period who received care from a clinic that prioritizes contraceptive use, the implant was more likely to be placed before resumption of sexual activity than the IUD, thus reducing repeat pregnancy (50).

### **Postabortal Long-Acting Reversible Contraception**

Almost one half of all abortions performed in the United States are repeat abortions (51). Inserting an IUD or implant immediately after abortion significantly reduces the risk of repeat abortion (52). As is the case with older women, the benefits of providing LARC to adolescents after a spontaneous or induced abortion outweigh the risks (see Table 1). The implant is safe to place after any abortion, including second-trimester or septic abortion (31). Intrauterine devices are safe to place after a first-trimester or second-trimester abortion; however, the adolescent should be counseled about the possibility of IUD expulsion. Data on postabortal etonogestrel implant

**Table 1.** U.S. Medical Eligibility Criteria for Contraceptive Use

Condition	Implant	Copper IUD	LNG-IUD	Clarification/Evidence/Comments
Age				
Menarche to younger than 18 y	1			
Menarche to younger than 20 y	1	2	2	Comment: Concern exists about the risk for expulsion from nulliparity and for STIs from sexual behavior in younger age groups.
Postpartum				
Less than 10 min after delivery of the placenta		1	2	Evidence: Immediate postpartum insertion of a copper IUD, particularly when insertion occurs immediately after delivery of the placenta, is associated with lower expulsion rates. Immediate insertion may happen after vaginal or cesarean birth.
10 min after delivery of the placenta to less than 4 wk	2	2	2	
Less than 4 wk and not breastfeeding	1	2	2	
Less than 4 wk and breastfeeding	2	2	2	
4 wk or later and breastfeeding or not breastfeeding	1	1	1	
Puerperal sepsis		4	4	Comment: Insertion of an IUD might substantially worsen the condition.
Postabortion				
First trimester	1	1	1	Clarification: IUDs can be inserted immediately after first-trimester spontaneous or induced abortion.
Second trimester	1	2	2	
Immediately after septic abortion	1	4	4	Comment: Insertion of an IUD might substantially worsen the condition.

1 = A condition for which there is no restriction for the use of the contraceptive method.

2 = A condition for which the advantages of using the method generally outweigh the theoretical or proven risks.

3 = A condition for which the theoretical or proven risks usually outweigh the advantages of using the method.

4 = A condition that represents an unacceptable health risk if the contraceptive method is used.

Abbreviations: IUD, intrauterine device; LNG-IUD, levonorgestrel-releasing intrauterine device.

Modified from U.S. Medical Eligibility Criteria for Contraceptive Use, 2010. Centers for Disease Control and Prevention (CDC). MMWR Recomm Rep 2010;59(RR-4):1–86.

safety and repeat abortion are lacking but can be extrapolated from data on IUDs and previous experience with a six-rod implant system that is no longer marketed in the United States that shows these methods were easy and safe to use and highly effective (53, 54).

## Conclusion

When choosing contraceptive methods, adolescents should be encouraged to consider LARC methods. Intrauterine devices and the contraceptive implant are

the best reversible methods for preventing unintended pregnancy, rapid repeat pregnancy, and abortion in young women. Counseling about LARC methods should occur at all health care provider visits with sexually active adolescents, including preventive health, abortion, prenatal, and postpartum visits. Complications of IUDs and the contraceptive implant are rare and differ little between adolescents and older women. Health care providers should consider LARC methods for adolescents and help make these methods accessible to them.

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