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Long-Acting Reversible Contraception for Adolescents
A Review

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IMPORTANCE Adolescents have higher rates of unintended pregnancies than any other age group. Contraceptive implants and intrauterine devices (IUDs) are long-acting reversible contraceptives (LARCs) that are known to be highly effective in preventing pregnancy. New devices have recently been approved for use in adolescents, yet pediatricians may be less familiar with how to counsel adolescents about implants and IUDs.

OBSERVATIONS LARC methods should be described in basic terms to adolescents, including hormone dose, method of insertion, and method of pregnancy prevention. Clinicians should appreciate the developmental stages of adolescents, discuss the most effective methods of contraception, and ensure confidentiality from their parents. Short-acting contraception methods (eg, oral contraceptives) can be used as a temporary bridge to provide coverage until a LARC method can be placed. The most common adverse effect of LARC is nuisance bleeding, which can be managed with short courses of oral contraceptives or nonsteroidal anti-inflammatory drugs.

CONCLUSIONS AND RELEVANCE LARC devices constitute first-line contraceptive methods for adolescents. All clinicians, including pediatricians, can counsel about LARC even before suggesting an oral contraceptive or another less effective contraceptive method. Effective, confidential communication with sensitive language to inform adolescents of the different types of LARC is necessary to normalize offering LARC as a contraceptive option and improve its uptake among adolescents. Special clinical populations can also be offered appropriate contraceptive options inclusive of LARC.

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Leading medical organizations,[1-3] including the American Academy of Pediatrics,[4] recommend long-acting reversible contraception (LARC) as first-line agents for use among adolescents.[5] LARC is the most effective method[6] and is an appropriate contraceptive consideration for adolescents. Counseling about LARC to all women, including adolescents, who have the highest rates of unintended pregnancies compared with any other age group,[7] has become a fundamental primary care service.[8] New devices have recently been approved for use in adolescents, yet pediatricians may be less familiar with how to counsel adolescents about newer, more effective contraceptive methods, such as contraceptive implants (hereinafter referred to as implants) and intrauterine devices (IUDs).

Teen pregnancy rates and adolescent birth rates among those aged 15 to 19 years are higher in the United States compared with other industrialized countries[9] despite decades of decline.[7] The combination oral contraceptive—despite its daily dosing, risk for thrombosis, and lower efficacy[10]—is still the most common contraceptive prescribed to adolescents, with more than half of adolescents aged 15 to 19 years (55.6%) reporting prior use of an oral contraceptive.[11] In contrast, rates of LARC use among adolescents are lower than those of any other age group of women.[12] Recent national estimates report LARC use among those aged 15 to 19 years to be 3.2% among sexually active US adolescents.[13]

This review sought to inform general pediatricians about current LARC options. With this information, pediatricians may accurately counsel and normalize offering LARC to adolescents. Specifically, we describe LARC methods, review basic LARC information, suggest strategies for bridging LARC with short-acting methods, review how to counsel adolescents to manage adverse effects after placement, and clarify LARC use for special adolescent populations.

LARC Methods

At the most basic level, LARC methods (implants and IUDs) are grouped together because of their long-acting, highly effective characteristics compared with traditional, less-effective, short-acting methods (pill, patch, ring, and injection). The implant is placed subdermally in the upper inner arm, and IUDs are placed through the cervix into the uterus during a speculum examination. By describing each method in basic terms to adolescents, pediatricians can normalize LARC methods as an acceptable contraceptive option.

Table 1. Comparison of LARC Methods[a]

Characteristic	LARC Method, Proprietary Device Name					
	Implant	Nonhormonal IUD	Hormonal IUD			
	Nexplanon	Paragard	Mirena	Liletta	Kyleena	Skyla
Active ingredient (dose)	Etonogestrel (68 µg)	Copper 380-mm wire	Levonorgestrel (52 µg)	Levonorgestrel (52 µg)	Levonorgestrel (19.5 µg)	Levonorgestrel (13.5 µg)
Location	Subcutaneous arm	Intrauterine	Intrauterine	Intrauterine	Intrauterine	Intrauterine
Specific indications and expectations						
Pregnancy prevention with <1% failure rate	Yes	Yes	Yes	Yes	Yes	Yes
Appropriate for nulliparous adolescents	Yes	Yes	Yes	Yes	Yes	Yes
Avoids hormones	No	Yes	No	No	No	No
Lighter, less frequent menses	No	No	Yes	Yes	Yes	No
Maintains natural menses	No	Yes	No	No	Yes	Yes
Treats dysmenorrhea and menorrhagia	Yes	No	Yes	No	No	No
Specific contraindications[b]						
Pregnancy	Yes	Yes	Yes	Yes	Yes	Yes
Anatomical abnormalities[c]	No	Yes	Yes	Yes	Yes	Yes
Current breast cancer	Yes	No	Yes	Yes	Yes	Yes

Abbreviations: IUD, intrauterine device; LARC, long-acting reversible contraception.

[a] Information was collected from each device's prescribing information handout.

[b] Contraindications as reported by *US Medical Eligibility Criteria for Contraceptive Use*.[19]

[c] Includes distorted uterine cavity and/or cervical, endometrial, or gestational trophoblastic malignant neoplasms.

Implant

The LARC method with highest efficacy (ie, lowest failure rate) is the single-rod contraceptive etonogestrel implant Nexplanon (Merck & Co Inc), which was approved by the US Food and Drug Administration (FDA) in 2008. Identical to its predecessor, Implanon, Nexplanon replaced Implanon after 2 years because of the need for an easier inserter and a radiopaque device to allow clinicians to verify its location in the arm with a radiograph for concerns of incorrect insertion and, rarely, migration.[14] Nexplanon has no negative effects on bone mineral density,[15] and the implant is effective for overweight and obese women.[16] The most common reason for discontinuation is unpredictable bleeding or spotting.[17]

Intrauterine Devices

At present, 5 T-shaped, polyethylene-framed IUDs are available in the United States. All have typical and perfect-use failure rates of less than 1%.[10] All 4 hormonal IUDs contain the same hormone, levonorgestrel, also found in numerous combination oral contraceptives and in the emergency contraceptive Plan B. The different doses of levonorgestrel do not appear to influence the efficacy or continuation of use of different IUDs.[18] **Table 1** compares indications and contraindications between LARC methods[19]; **Table 2** compares benefits and possible adverse effects between LARC methods.[10,20] **Table 3** offers practical tips for counseling adolescents about LARC.

Paragard

The copper IUD Paragard (or Cu-T380A; Duramed Pharmaceuticals) was approved by the FDA in 1984 and is a device with copper wire wrapped around the stem and both arms of the plastic frame. It is hormone free and ideal for adolescents who describe their menstruation as light without dysmenorrhea. Paragard, unlike hormonal IUDs, causes longer and heavier menses, which is the leading reasons for this method's discontinuation.[21] Most adolescents who select Paragard do so to avoid hormones and because of a desire for cyclical menses.[22] A characteristic unique to the copper IUD among all LARC methods is its capacity to act as the most effective form of postcoital emergency contraceptive. More effective than the oral formulations of emergency contraception, such as ulipristal acetate (Ella) or levonorgestrel (Plan B),[23] Paragard can protect women from pregnancy within 120 hours of unprotected intercourse,[24] especially obese women in whom the oral formulations are less effective.[25]

Mirena

Mirena (Bayer Pharmaceuticals) is a hormonal IUD approved by the FDA in 2000 and the only IUD specifically tested among women to treat dysmenorrhea and menorrhagia.[26] Unfortunately, Mirena is also the only hormonal IUD not specifically approved by the FDA for nulliparous women because its approval was based on studies that only evaluated parous women. However, several studies have shown nulliparous adolescents and parous women to have similarly low rates of device discontinuation and expulsion, confirming that Mirena is well tolerated among nulliparous young women.[27]

Skyla

Skyla (Bayer Pharmaceuticals), approved by the FDA in 2013, has the lowest dose of progestin of all the hormonal IUDs. Skyla's theoretical advantage is its smaller size. With a narrow-diameter inserter, Skyla may be mechanically easier to place in nulliparous women. Skyla has a lower dose of progesterone, allowing for less chance for amenorrhea. It is a good option for nulliparous adolescents who still want their menstrual cycles because only 6% of women using Skyla have amenorrhea after 1 year.[28]

Table 2. Benefits and Possible Adverse Effects of LARC[a]

Characteristic	LARC Method, Proprietary Device Name					
	Implant	Nonhormonal IUD	Hormonal IUD			
	Nexplanon	Paragard	Mirena	Liletta	Kyleena	Skyla
Basic benefits						
Effectiveness[b]	0.05	0.80	0.20	0.20	0.30	0.30
Duration of use, y						
FDA approved	3	10	5	3	5	3
Postmarketing studies	5	12	7	5	NA	NA
Effects on menstruation	Possible regulation (or possible unscheduled bleeding)	Maintains cyclical menses but may be heavier with cramps	Lighter, less frequent menses; improved cramps	Lighter, less frequent menses	Menses likely to still be present	Cyclical menses
Amenorrhea at 1 y, %	22[c]	NA	20	19	12	6
Main appeal	Avoids a pelvic examination; painless procedure	No hormonal exposure	Lighter, less frequent menses; improved cramps	Affordable	Smaller device; menses likely to continue, 5-y duration	Smaller device; ensures menses continue
Possible adverse effect						
Expulsion, %	0.0001	5.7	4.5	3.5	3.2	3.1
Main drawback[d]	Difficult to predict menstrual response	May cause heavier, longer, and/or painful menses	Possible amenorrhea	Short duration; not FDA approved for menstrual regulation	Less likely to cause amenorrhea	Shorter duration of action

Abbreviations: FDA, US Food and Drug Administration; IUD, intrauterine device; LARC, long-acting reversible contraception; NA, not applicable.

[a] Information was collected via each device's prescribing information handout.

[b] Effectiveness was reported as the Pearl Index (number of pregnancies per 100 woman-years).

[c] Data reported for implant are based on bleeding patterns at year 2 (year 1 data not reported).

[d] A drawback for 1 patient may be a benefit for another.

Liletta

Liletta (Actavis Pharma, Inc) was approved by the FDA in February 2015. This IUD is similar to Mirena in terms of progestin type (levonorgestrel) and dose (52 µg). The main differences between Liletta and Mirena are cost and duration of action. Through the federal 340B drug-pricing program, Liletta is available to public health clinics and community health centers for $50, making this IUD more accessible regardless of income and insurance coverage.[29] Duration of action has been assessed to 5 years for Liletta and 7 years for Mirena; FDA-approved duration of use for both devices is anticipated to be extended by the FDA as efficacy studies progress (Table 2).[30] Liletta has not been studied specifically among women with dysmenorrhea or menorrhagia; thus, it is primarily marketed as a contraceptive device and not promoted for its theoretical noncontraceptive benefits (decreased menstrual bleeding and cramping), as was studied with Mirena.[31]

Kyleena

Kyleena (Bayer Pharmaceuticals) is the most recent IUD on the US market; it was approved by the FDA in September 2016. Lasting longer than Skyla, Kyleena offers a duration of 5 years at a lower dose of hormone than Mirena or Liletta but more than Skyla (Tables 1 and 2).[20] A smaller frame with a narrower placement tube may help improve use among nulliparous women. In addition, a lower-dose system may appeal to women seeking lower exposure to synthetic hormones and a reduced likelihood of developing amenorrhea (12% by 1 year).

Basic LARC Information

Mechanisms of Action

Short- and long-acting contraception prevent pregnancy by 1 of the following 3 processes: the ovulatory process, sperm penetration through cervical mucosa, and morphologic changes of the endometrium. The contraceptive implant works on all 3 processes, most notably a 99% suppression of ovulation by subdermal absorption that interferes with the positive feedback of estradiol on gonadotropin secretion.[32] Conversely, the mechanism of action for IUDs does not completely suppress ovulation (50% suppression for hormonal IUDs and 30% suppression for copper IUDs).[33] The primary mechanism of action of hormonal IUDs is thickening of cervical mucous, which inhibits sperm passage through the cervix, including inhibition of sperm mobility and function (capacitation) and altering of the endometrium. The copper IUD causes a separate and direct spermicidal effect. Prefertilization mechanisms contribute most significantly to the effectiveness of all types of implants and IUDs.[34]

Efficacy

LARC efficacy does not require active user adherence; thus, typical use efficacy (probability of pregnancy during 1 year of contraception that accounts for varying degrees of user adherence) equals perfect use efficacy. LARC relies the least on user adherence, requires a clinician to discontinue therapy, has the highest rates of efficacy compared with other contraceptive methods, and is immediately reversible on removal.[5]

Continuation

In a study of more than 4000 US women of reproductive age, rates of continuation for LARC methods were higher (86%) compared with short-acting methods (55%) after 12 months of observation. Subsequent rates of unintended pregnancy were 22 times higher for those using short-acting methods compared with those using LARC.[35] When examining only women younger than 20 years in this sample, adolescent rates of LARC continuation were similar to those

of older women.[36] In a systematic review that examined women 25 years and younger,[37] continuation rates for IUDs were higher (82%-89%) compared with other non-LARC contraceptive methods (54% for oral contraceptives and 53% for depot medroxyprogesterone acetate injections).

Safety

Safety concerns for the implant are primarily found around the time and at the site of placement. These include bruising of the arm, slight local irritation, discomfort, or paresthesialike sensations at the site. Although adolescents are at high risk of acquiring sexually transmitted infections, the risk for developing pelvic inflammatory disease (PID) with an IUD is generally very low.[38] The risk is not significantly higher in nulliparous women beyond the small increased risk present for all women (0.1%) in the first 20 days after IUD placement.[38] In a review of the literature specifically evaluating the safety of IUD use among young women, the risks for adverse outcomes related to pregnancy, perforation, infection, heavy bleeding, or removals for bleeding among young IUD users were low and not clinically significant or different from those among older IUD users.[39] Risk for expulsion, especially for copper IUDs, is notably higher among younger women (9.8% in those aged 13 to 19 years compared with 2.2% in those aged 20 to 30 years).[40]

Noncontraceptive Benefits

The short-term anticipated effects, or noncontraceptive benefits, of LARC can often drive the decision to initiate or continue LARC use among menarchal adolescents without a compelling need for contraception (ie, sexually naive adolescents with menstrual problems or adolescents who want to maintain contraception use after a romantic relationship has ended). These noncontraceptive benefits are critical to discuss for initiation and continuation to prevent gaps in contraceptive coverage. For example, the contraceptive implant and hormonal IUD can treat dysmenorrhea and pelvic pain, reduce menstrual bleeding, reduce the severity of symptoms of premenstrual syndrome and premenstrual dysphoric disorder, and treat menstrual migraines or menstrual seizures.[41] Finally, the hormonal IUD has a protective effect against endometrial cancer and endometrial hyperplasia[42] and no effect on breast cancer,[43] and the copper IUD might act as a protective cofactor in cervical cancer.[44]

Contraindications

For the implant and IUD, known or suspected pregnancy and uterine bleeding of unknown etiology is a reason to delay placement. The *US Medical Eligibility Criteria for Contraceptive Use* guidelines[19] delineate specific medical conditions to assist health care clinicians with selecting appropriate contraceptives. On a scale of 1 (no restriction) to 4 (unacceptable health risk), initiation and continuation safety scores are listed for each contraceptive method per specific medical conditions. For example, PID has an unacceptable risk (score of 4) for initiation, but advantages generally outweigh theoretical or proven risks (score of 2) for continuation with PID.[19]

Contraindications for IUD placement in adolescents are the same as for adult women. Anatomical concerns (ie, a distorted uterine cavity) or an active infection with gonorrhea, chlamydia, purulent cervicitis, or current PID is a reason to avoid placement until 7 days after treatment for asymptomatic gonorrhea or chlamydia, 1 month after cervicitis treatment, and 3 months after PID treatment.[45] If the patient is asymptomatic, screening can occur at the time of IUD placement, with treatment afterward (without removal) for women at high risk for sexually transmitted infections.[46] Decisions about IUD retention vs removal in the context of PID are often based on the severity of the illness after response to appropriate antibiotic therapy.[38]

Table 3. Practical Tips to Counsel Adolescents About Contraception

Tip	Explanation
Discuss most effective contraceptive methods first	Use sensitive, clear, and simple language with adolescents and their parents. Start with the most effective, longest-acting methods first to normalize offering LARC as an option among several contraceptive methods. Include the display of anatomical models with visual examples of implants and IUDs to touch and demystify the experience and ease communication. Emphasize easy, long-acting, set-and-forget proprieties of LARC.
Ensure confidentiality	Set the stage to establish trust by asking to speak to the adolescent alone in front of the adolescent-parent dyad. The US Supreme Court ruled that minors have a constitutionally protected right to privacy with respect to the use of contraceptives. Several states' laws permit minors to obtain contraceptives without parental consent. National organizations have published policies that protect adolescents' confidential access to contraception. Encouraging adolescents to involve a parent or guardian in their contraceptive decision making, while avoiding mandated parental notification for those specific instances in which parental involvement may not be in the best interest of the adolescent patient, serves to respect and support adolescent autonomy.
Appreciate developmental stages	The early, middle, and late developmental stages of adolescence consist of a matrix of varying physical, cognitive, social, emotional, and moral factors. Across each developmental stage, adolescents may enter a clinical encounter with prior experiences and personal perspectives about contraception.
Consider relationships	Discussions about "modern contraception" can begin as soon as discussions about relationships and sexual health begin with adolescents. Providing comprehensive sexual health, including addressing reproductive coercion or birth control sabotage, is an important component that might affect contraceptive decisions.
Encourage dual method use with condoms	Emphasize that contraceptive methods do not protect against STI acquisition and condoms must be used for STI protection.

Abbreviations: IUD, intrauterine device; LARC, long-acting reversible contraception; STI, sexually transmitted infection.

Cost

The Affordable Care Act has mandated health insurance coverage for contraception, and results have shown significant cost-saving benefits for all members of the health plan.[47] The up-front cost of LARC methods (often ranging from $500 to $1000) becomes cost saving after 1 year of use.[48] In Colorado in 2011, teen pregnancy decreased by 26% through increased health care clinician education and decreased out-of-pocket costs for the implant and IUD.[49] Thus, denying female adolescents full coverage of contraceptives would have significant financial consequences from the employer and individual perspectives (**Box 1**).[47]

Placement of LARC

Placement of LARC involves relatively quick bedside procedures. The procedure for the implant requires less than 1 minute to place the device superficially in the nondominant, upper inner arm with an inserter that is preloaded with the device. The procedure for the IUD, although less than 5 minutes, often involves discomfort.

Box 1. Key Barriers to LARC Uptake

Structural Barriers
Cost
Accessibility
Clinical logistics
Lack of adolescent-trained clinics
Distal factors (eg, cultural or social norms)

Clinician Barriers
Lack of awareness
Lack of knowledge
Lack of training opportunities
Comfort regarding confidentiality
Comfort with counseling adolescents about LARC
Coercion into selecting LARC

Individual Barriers
Ambivalence about pregnancy
Lack of awareness of LARC
Myths and misconceptions about LARC
Fear of placement
Confidentiality concerns

Gaps in Research
Uptake interventions
Managing adverse effects (eg, pain and bleeding)
Continuation and maintenance interventions
Improved communication

Abbreviation: LARC, long-acting reversible contraception.

Box 2. Key LARC Resources

Guidelines
CDC's *US Medical Eligibility Criteria for Contraceptive Use*
WHO's *Selected Practice Recommendations for Contraceptive Use*
CDC's *Providing Quality Family Planning Services*

Resourceful Organizations
American College of Obstetrics and Gynecology
Physicians for Reproductive Health
Society for Adolescent Health and Medicine

Key Websites
https://www.bedsider.org
http://www.larctaskforce.org
http://www.reproductiveaccessproject.org
http://www.rhedi.org
http://www.thenationalcampaign.org
http://prh.org/teen-reporductive-health/standardized-case-videos-reproductive-and-sexual-health-needs/

Abbreviations: CDC, Centers for Disease Control and Prevention; LARC, long-acting reversible contraception; WHO, World Health Organization.

Placement of an IUD is one of the largest obstacles for adolescents and clinicians to overcome when considering an IUD. A young woman's first gynecological examination may coincide with her first IUD placement. Although nulliparous women may experience varying levels of discomfort, insertion-related pain scores and frequency of vasovagal episodes do not differ by age, parity, IUD type, or history of dysmenorrhea[50]; in addition, painful insertion is not associated with earlier removal.[51] A few minutes of discomfort is expected in all women during IUD placement as a tenaculum is placed on the cervix to straighten the cervical canal, a sound is inserted through the internal os to measure the depth of the uterine cavity, and a device is advanced into the uterine cavity.

Interventions for pain management during IUD placement have included analgesics (prophylactic ibuprofen, naproxen sodium, or ketorolac tromethamine), anesthetics (paracervical and/or cervical lidocaine blocks or topical cervical lidocaine gels, creams, or sprays of varying strengths), cervical ripening agents (vaginal or oral misoprostol), and nonpharmacological interventions (aromatherapy, music therapy, distraction, and preplacement counseling). Results of a recently updated Cochrane review concluded that topical lidocaine gel, misoprostol, and most nonsteroidal anti-inflammatory drugs do not help to reduce pain, whereas some lidocaine formulations, tramadol hydrochloride, and naproxen had some effect on reducing IUD insertion-related pain in specific groups.[52] The most effective method of pain control has not yet been established.

Training in LARC Placement

Training in LARC placement has been recommended for primary care clinicians who treat adolescents, including pediatricians, family medicine physicians, and adolescent medicine–trained health care professionals.[53] Little evidence suggests that LARC placements are technically more difficult in adolescents and do not require additional technical expertise.[1] Ultrasonographic evaluation does not give additional information compared with clinical pelvic examination and sound measurement of the uterine cavity at the time of the insertion procedure[54]; thus, ultrasonography is not necessary before or after IUD placement among uncomplicated nulliparous adolescents. **Box 2** provides several online tools with easy access to patient handouts and education modules for clinicians, including case videos.

Bridging to LARC With Short-Acting Methods

Using short-acting methods as a temporary bridge to provide contraceptive coverage until a LARC method can be placed is common clinical practice. Adolescents can be counseled that a backup method (condoms or provisional emergency contraception) may be used for 7 days before LARC is effective. However, if LARC is placed within 5 days after initiating menses, immediately after childbirth or after abortion, or immediately after switching from another hormonal contraceptive, LARC is immediately protective.[55] The one exception is the copper IUD that acts as an emergency contraception up to 5 days after unprotected intercourse, regardless of when in the menstrual cycle the device is placed.[24] Giving oral emergency contraception at the time of placing an IUD for any unprotected intercourse in the 2 weeks (more than the traditional 5-day window) before placement has also been shown to safeguard against pregnancy.[56] For all short- or long-acting methods, regardless of time to reach contraceptive efficacy, condom use should be recommended to protect against sexually transmitted infections.[57]

Managing Adverse Effects After LARC Placement

Nuisance bleeding (spotting, irregular bleeding, and an increase in bleeding days) is to be expected among most LARC users because irregular bleeding is common in the first 3 to 6 months after placement of all devices. The amount of bleeding with hormonal devices improves for most women with longer times that the device is in place because the lining of the endometrium thins, although this is less predictable among implant users. Women with heavier menstrual bleeding are less likely than women with moderate flow to report amenorrhea after 12 months of hormonal IUD use.[58]

Short courses of combined oral contraceptive or nonsteroidal anti-inflammatory drug treatment may offer short-term improvement for women with persistent bleeding after placement.[59] Whether the passage of time or the actual effects of oral contraceptives or nonsteroidal anti-inflammatory drugs on the endometrial lining manage the bleeding, the end result may be continuation of the contraceptive device use. Limited clinical trial data suggest that mefenamic acid, mifepristone, ethinyl estradiol, or doxycycline hyclate alone decreases the length of bleeding in implant users. Some of these treatments seem to be effective in interrupting short-term bleeding, but none seem to provide benefits in terms of normalizing medium- or long-term bleeding patterns. A systematic review[60] concluded that no sufficient data are available to recommend the routine use of a specific regimen for abnormal uterine bleeding after LARC placement. The Centers for Disease Control and Prevention has developed a flowchart to help manage this common postplacement problem because of the lack of adequate evidence to guide managment.[19]

LARC for Special Populations

Although individual patients will need case-based decisions for contraception, the *US Medical Eligibility Criteria for Contraceptive Use* provides guidance for initiation and continuation of LARC use for several conditions.[19] Remembering that LARC does not contain estrogen, the typical contraindications for estrogen-containing hormonal contraception (ie, the pill, patch, or ring) are not contraindications for any LARC method.

Case reports, case series, and reviews are often used to assist with contraceptive decision making for specific individuals.[19] For example, adolescents with seizure disorders,[61] autoimmune conditions (eg, lupus,[62] inflammatory bowel disease,[63] and type 1 or 2 diabetes[64]), and cardiovascular conditions[65] and immunocompromised patients (including solid organ transplant recipients[66]) who require several medications that may cause drug interactions are likely to be appropriate candidates for LARC. The procedure to place or remove an implant or IUD is relatively quick yet will involve some minimal vaginal or subdermal bleeding. Conditions that predispose to bleeding, such as thrombocytopenia[67] or von Willebrand disease,[68] often do not require extra monitoring or interventions at the time of the insertion procedure. The therapeutic amenorrhea from hormonal LARC in these situations often outweighs the risks for bleeding around the time of placement. Patients with cognitive or physical disabilities may also benefit from LARC[69]; however, placement and management may be more challenging.[70] In these situations, the implant may be more feasible to place and monitor. If the IUD is preferred, ultrasonography before the procedure to verify anatomy with the use of anesthesia may be necessary.[71]

Finally, adolescents in the postpartum[72] or postabortion[73] period are also eligible for LARC immediately after delivery or procedure, respectively. LARC does not negatively influence breastfeeding or the growth and development of breastfed infants.[74] Pregnancy with an IUD in place, although extremely rare, could lead to an ectopic pregnancy. An IUD can still be offered to women with a history of ectopic pregnancies; the absolute risk is low because an IUD is so effective at preventing pregnancy.[55] When feasible, removal of the IUD can be offered if the adolescent becomes pregnant with the IUD in place to prevent possible spontaneous abortion.[75]

Conclusions

LARC constitutes the first-line method of contraception for adolescents. All clinicians, including pediatricians, can counsel about LARC even before suggesting an oral contraceptive or other less effective contraceptive methods. Effective, confidential communication, with sensitive language to inform adolescents of the different types of LARC, is necessary to normalize offering LARC as a contraceptive option and improve its uptake among adolescents. Special clinical populations can also be offered appropriate contraceptive options inclusive of LARC.

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