Update on Adolescent Contraception

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Keywords
- Contraception
- Adolescents
- Sexual history taking
- Long-acting reversible contraception

Key points
- Pediatric providers play a key role in the well-being of adolescents, including their sexual health.
- Pediatric providers can offer or refer for all contraceptive options, educate teens on available methods, and support adolescents to continue contraception.
- The implant and intrauterine devices, referred to as long-acting reversible contraception (LARC), have the highest efficacy and continuation of any methods.
- LARC are recommended as safe, effective, first-line options for adolescents requesting contraception.

ADOLESCENT CONTRACEPTION

Pediatric providers play a key role in adolescent sexual health. Leading medical organizations, such as the American Academy of Pediatrics, recommend that pediatric providers take a sexual history and address contraception with all their adolescent patients to help reduce the negative health consequences related to unintended teen pregnancy. This article outlines important aspects of adolescent health visits, specifically sexual history taking, reviews adolescent development as it relates to sexuality, and discusses contraceptive counseling appropriate to an adolescent’s developmental stage. The article also summarizes key information needed to educate teens on available methods, provides

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up-to-date contraceptive options, and support adolescents to continue contraception in the context of achieving their goals. The topics of menstrual suppression with hormonal methods, contraception with complex medical conditions, and birth control for adolescents with physical and development disabilities are also reviewed.

**TEEN PREGNANCY AND CONTRACEPTIVE USE**

Primarily owing to increased use of contraception, the teen birth rate in the United States was at a record low in 2013, decreasing by 10% from 2012 and an overwhelming 43% since 1991. However, the US teen pregnancy rate continues to be among the highest in the developed world and a considerable public health problem [1]. Each year, almost 615,000 US women aged 15 to 19 years become pregnant and 82% of these pregnancies are unintended [2]. Teen pregnancy and childbearing affects poorer youth of all races disproportionately. It also carries significant short and long-term impacts for teen mothers and their children [3].

Sexual intercourse is common among adolescents. In 2013, nearly one-half (48%) of those aged 17, 61% of 18-year-olds, and 71% of 19-year-olds reported ever having had sex [4]. Yet, many teens are not using adequate and/or consistent protection against pregnancy and sexually transmitted infections (STIs). One in 4 female teens report using no contraceptive method at last intercourse [5] and only 20% report having used both a condom and a hormonal method [6], although dual method protection is considered the most effective way to prevent pregnancy and STIs.

For decades, pediatric providers and their adolescent patients have been limited in their choice of contraceptive options to barrier and short-acting hormonal methods. Condoms and the pill are still the most common contraceptive methods used by adolescents, despite their dependence on user adherence and high rates of incorrect and inconsistent use. In 2013, almost 60% of currently sexually active high school students reported using a condom during their last sexual intercourse, 19% of females reported the use of the pill, and 4.7% reported the use of depot medroxyprogesterone acetate (DMPA), the patch, or the birth control ring [7]. These short-acting contraceptive methods have low continuation rates and high pregnancy rates in adolescents [8].

Although recommended as first line for contraception, only 4.5% of female teen contraceptive users in 2009 relied on long-acting reversible contraceptives (LARC), including intrauterine devices (IUDs) and implants. This is, however, an increase from only 1.5% in 2007 and just 0.3% in 2002 [9]. The American Academy of Pediatrics and the American College of Obstetricians and Gynecologists recommend the contraceptive implant and IUD as first line for adolescents requesting contraception [10,11] owing to the overwhelming potential for LARC to reduce unintended pregnancy in this population. The IUDs and the etonogestrel implant are safe, acceptable, and highly efficacious methods with continuation rates in teens and young adults of 81% and 82% at 1 year, respectively [12]. This is in comparison with short-acting methods, such as
the pill and the vaginal ring, which have continuation rates of 30% to 40% at 1 year in a similar population [12]. The landmark CHOICE Project, a large contraceptive research study that enrolled more than 9000 women requesting birth control, with 61% between the ages of 14 and 25 years of age, demonstrated that if barriers to use, such as cost and access, are removed, LARC methods are highly preferred in all women, including teens. Furthermore, teens who chose LARC had lower rates of pregnancy, birth, and abortion than those of sexually active teens [13].

**ADOLESCENT HEALTH VISITS**

Adolescent health care providers are a valuable and trusted resource to teens for accurate information about sexual health and contraception [14]. Medical organizations, including the American Academy of Pediatrics, recommend that adolescent visits include a confidential, one-on-one interview to discuss sexuality and sexual health topics, which include sexual orientation, sexual behaviors, STI prevention, and contraception [15,16].

Talking about sex with an adolescent can be daunting to many providers. However, adolescents are usually candid about their sexual history when asked in a confidential, nonjudgmental manner. There are several key factors in establishing a safe and trusting environment most conducive to adolescent visits.

**Adolescent-friendly environment**

Pediatric clinics that serve adolescents should make them feel welcome. Waiting and examination rooms can have appropriate reading materials and resources for teens. Clinic providers and staff should be well-versed in policies regarding adolescent visits so that scheduling, communication, which may need to be confidential, and rooming are appropriate. Handouts, including those on sexual health, should be geared to teens and young adults (Fig. 1).

**One-on-one relationship between provider and adolescent**

From infancy, a child’s relationship with their health provider has been mediated by their parent or guardian. However, the transition to adulthood requires that adolescents learn how to manage their own health care needs. The one-on-one interview should be introduced in early adolescence (about age 11–12) as a routine part of all visits.

Providers should focus on establishing rapport and providing anticipatory guidance based on the teen’s developmental stage. It is also important for parents to know they are not being excluded from their child’s care, but are helping their teen to develop the skills needed to care for themselves as they become older and more independent.

**Confidentiality and its limits need to be discussed**

Adolescents are more likely to seek health care, provide truthful answers, and ask relevant questions if assured of confidentiality. The Society for Adolescent Medicine’s position paper on the subject outlines the essential nature of confidential care for teens [17]. There is a clinical imperative based on adolescents...
**Fig. 1.** Teen-appropriate patient handout for contraceptive counseling. IUD, intrauterine device. (Courtesy of Bedsider.org; with permission.)
developing autonomy and independence, the need for health screening based on confidential information (STIs, pregnancy), research findings that support better care, as well as the ethical and legal principles that guide providers [17]. Minors’ right to confidential care, including contraceptive services, varies by state, with 26 states allowing all minors to consent to contraceptive services. Individual state policies can be accessed at www.guttmacher.org [18].

Despite the need for minors to be able to consent to their own contraceptive care, it is important to consider parental involvement. Parents are highly influential in adolescent sexual and contraceptive decision making. Parental involvement has been shown to improve contraceptive compliance [19] and should be encouraged and facilitated when possible.

**ADOLESCENT DEVELOPMENT AND THE SEXUAL HISTORY**

Adolescence is a time of rapid change. Although providers commonly focus on the physical changes of adolescence, equally significant are the developmental changes, including emerging and evolving sexuality. Adolescents become very aware of themselves as a gender-specific and sexual human being, even early in adolescence. Adolescent development can be described in 3 stages: early, middle, and late adolescence. Taking a sexual history from an adolescent should be developmentally appropriate, nonassuming, and comprehensive. Sexual histories should be taken in the context of adolescents’ age and developmental stage (Table 1).

Early adolescence (age 11–14) is marked by the onset of puberty with accompanying physical and emotional changes. These changes can be embarrassing and confusing for teens. Experimentation, such as masturbation, is common. Although sexual feelings and curiosity may begin in early adolescence, sexual intercourse before age 14 is uncommon and should alert the provider to a potentially risky situation. Cognitive abilities during early adolescence tend to be concrete, so providers should take care to ensure understanding of questions and counseling and clarify if needed. Normalization of a maturing adolescent’s physical changes, acknowledgment and acceptance of emerging sexuality, and clear encouragement for sexual abstinence is appropriate. Parents and guardians should be encouraged to communicate with their teens about sexual health topics, such as the adult’s values regarding relationships and expectations for healthy, responsible behavior. Discussions at this stage should focus on the formation of healthy and safe relationships with friends, as well as romantic partners.

Middle adolescence (ages 14–17) is characterized by the exploration of identity and independence. Rates of sexual behaviors increase during middle adolescence. Only 16% of teen have had sex by age 15, but this increases to nearly one-half (48%) of those aged 17 years [4]. Despite this, the cognitive ability to think abstractly about future consequences and delay gratification are still being established [20]. Adolescents often revert back to more concrete thinking in stressful or emotionally charged situations. This can make consistent condom and contraceptive use challenging. Access to confidential care may
# Table 1
Adolescent stages and sexual health counseling

<table>
<thead>
<tr>
<th>Cognitive development</th>
<th>Social-emotional development</th>
<th>Counseling</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Early adolescence (ages 11–14)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Growing capacity for abstract thought.</td>
<td>• Extremely self-conscious.</td>
<td>• Ideal time for anticipatory guidance.</td>
<td>“It’s important for me to discuss sexual health topics with all of my patients, maybe even before they have questions. What does the term ‘sex’ mean to you?”</td>
</tr>
<tr>
<td>• Mostly interested in the present.</td>
<td>• Tendency to return to “childish” behavior.</td>
<td>• Sexual orientation/preference may be formed.</td>
<td>“Tell me about your best friend or what you look for in a friend...It sounds like you would not want to hang out with someone who treated you badly or made you feel badly about yourself.”</td>
</tr>
<tr>
<td>• Greater interest in privacy.</td>
<td>• Greater interest in privacy.</td>
<td>• Provider needs to introduce sexual health topics and explore teen’s definition of “sex.” Younger teens not likely to bring up on their own.</td>
<td></td>
</tr>
<tr>
<td>• Ideal time for anticipatory guidance.</td>
<td>• Intense self-involvement.</td>
<td>• Encourage patient to apply the same qualities of healthy friendships (mutual respect, communication) to romantic partners.</td>
<td></td>
</tr>
<tr>
<td>• Tendency to return to “childish” behavior.</td>
<td>• Increased drive for independence.</td>
<td>• Discussion of peer group may help teen talk more freely and reveal misconceptions about sex and contraception.</td>
<td></td>
</tr>
<tr>
<td>• Greater interest in privacy.</td>
<td>• Greater reliance on friends.</td>
<td>• Ask what is most important to them about birth control (e.g., that it works really well, or does not make them gain weight).</td>
<td>“What are your friends using for birth control? What do they say about it?”</td>
</tr>
<tr>
<td>• Ideal time for anticipatory guidance.</td>
<td>• Intense self-involvement.</td>
<td>• Support them to make the decision based on your counseling.</td>
<td>“Have your friends or family talked about any birth control methods? What are their thoughts about them?”</td>
</tr>
<tr>
<td>• Tendency to return to “childish” behavior.</td>
<td>• Increased drive for independence.</td>
<td></td>
<td>“It sounds like the most important thing for you is to avoid pregnancy and you said pills are hard to take. What do you think would be the best method for you?”</td>
</tr>
</tbody>
</table>

(continued on next page)
also be a barrier and many teens do not seek health care until well after their first sexual intercourse, leaving them at high risk for STIs and unintended pregnancy. All providers should confidentially offer resources, such as medically accurate, teen-friendly websites on sexual health (Table 2), discuss skills such as negotiation for correct and consistent condom use, and explain the options for highly effective contraception.

<table>
<thead>
<tr>
<th>Cognitive development</th>
<th>Social-emotional development</th>
<th>Counseling</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Late adolescence (age 18–21)</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Greater ability to delay gratification and plan for future.</td>
<td>• Increased sense of identity and emotional stability.</td>
<td>• Ask about future plans. Discuss how having a child now might affect these plans.</td>
<td>“Do you want to have children in the future and, if so, when?”</td>
</tr>
<tr>
<td>• Can reason through problems.</td>
<td>• Desire for intimacy and serious relationships.</td>
<td>• Ask what partner thinks about child bearing and birth control.</td>
<td>“It sounds like you do not want to have a child now. What birth control method would work best for you?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss that with a long-term, serious sexual relationship comes a higher chance of pregnancy and, if pregnancy not desired, a greater need for effective birth control.</td>
<td></td>
</tr>
</tbody>
</table>

### Table 2
Teen-friendly, medically accurate websites on sexual health

<table>
<thead>
<tr>
<th>Who</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>The National Campaign to Prevent Teen Pregnancy’s online birth control support network. No funding from pharmaceutical companies.</td>
<td>• Information and comparison of all contraceptive methods.</td>
</tr>
<tr>
<td></td>
<td>• Health clinic finder (enter zip code).</td>
</tr>
<tr>
<td></td>
<td>• Can set up daily, weekly, monthly text message reminders (for short-acting methods).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTV’s public health campaign to support young people to make responsible decisions about their sexual health. Also supported by the Kaiser Family Foundation.</td>
<td>• STI information and prevention.</td>
</tr>
<tr>
<td></td>
<td>• Talking to partner about sexually transmitted infections.</td>
</tr>
<tr>
<td></td>
<td>• Links to other trusted sexual health resources including live chat feature.</td>
</tr>
</tbody>
</table>
Late adolescents (age 18–21) have often reached full physical maturity and the majority (71%) have had sexual intercourse by age 19 [4]. Teens of this age are more likely to be involved in serious relationships and condom use often declines as a relationship progresses [21], leaving them at high risk for unintended pregnancy. Despite this, older teens have more capacity to think abstractly and plan for the future. Providers can have more in-depth conversations about healthy and safe relationships, STI prevention and screening, intentions for child bearing, and the importance of contraception in meeting their goals.

Regardless of age, open-ended, inclusive, and clarifying questions are essential to obtain correct information and normalize varying sexual preferences and behaviors. After assessing what the teen understands the term to mean, using the phrase “having sex” is more likely to be understood than “having intercourse” or “being sexually active.” Providers also should be cognizant of judgmental questions. Instead of “You don’t have unprotected sex, do you?”, a provider might ask, “How do you protect yourself from pregnancy and STIs when having sex?” Finally, avoiding leading questions can help to assess where there is an opportunity for intervention. Instead of asking “You are using condoms all the time?”, ask “How often do you use condoms?” or “When was the last time you had sex without a condom?”

**CONTRACEPTIVE COUNSELING**

Contraception should be discussed with all teens. Depending on their age and developmental stage, adolescents are often very curious and willing to discuss contraceptive options, even if they do not intend to imminently engage in sexual activity or initiate contraception. Pediatric health care providers and parents can be reassured that medically accurate information about STI prevention and contraception does not increase rates of sexual activity [22].

Contraceptive counseling does not only include education about available options. Sexually active adolescents may decline contraception because they have concerns about birth control or because they feel they do not need it. Providers need to explore these concerns, address adolescent’s ambivalence, and work with the teen to identify the positive influence contraception could have on their life and their future.

Understand patient misconceptions

Many adolescents hold misconceptions that can influence their decision to initiate contraception. Asking adolescents about positive and negative contraceptive experiences among their friends and family members, as well as their own experiences, beliefs, and opinions, can reveal important information for education and counseling. Providers can offer accurate information about contraceptive safety and efficacy, as well as reassurance regarding common concerns such as contraceptives effect on the menstrual cycle (eg, patients may have concern about long-term medical effects of amenorrhea), weight, mood, and future fertility.
Discuss the potential impact of contraception on current and future goals

Asking an adolescent of any age about their plans to start a family and have children of their own can be an effective strategy to start a discussion about contraception. This creates an alliance with the adolescent in supporting their efforts to have children when they are ready. It also provides an opportunity to discuss adolescent’s goals before starting a family and how contraception may be useful to them. Because most adolescents will report that they want to delay childbearing for at least 1 year or longer, this question can pave the way for a discussion of the benefits of LARC.

The medical benefits of certain contraceptive methods may be enticing to teens as well. Understanding the noncontraceptive benefits of birth control methods in treating menstrual problems like dysmenorrhea or menorrhagia may encourage teens to initiate or continue birth control, regardless of current sexual activity.

Empower adolescents to choose

Adolescent development is a progression of increased identity formation, autonomy, and independence. It is important for providers to offer accurate and comprehensive information, but then to support the adolescent to decide which method is best for them. Adolescents may be wary of initiating LARCs because they cannot stop the method on their own, which may feel like a threat to their autonomy. They should be assured that they can have the device removed at any time. Studies have shown that when given accurate information about the most effective methods, and removing barriers of cost, access, and confidentiality, the majority of adolescents will choose and continue LARC [23].

Start a contraceptive method on the day of visit

Given the potential consequences of an unintended pregnancy, there should be no delay in initiation once an adolescent decides to use contraception. All methods can be provided immediately, including LARC. If a provider does not offer a certain method, such as the implant or the IUD, the teen can start a bridge method (such as a combined hormonal contraception [CHC] or DMPA) until the visit for their desired method. Counseling on the use of condoms, provision of emergency contraception if indicated, and STI testing should also be performed without delay. Barriers such as cost and confidentiality can be addressed by referrals to federally funded Title X clinics that provide low-cost, confidential family planning services, as well as other community clinics that may serve adolescents and young adults, such as school clinics, health departments, universities, and reproductive health clinics.

CONTRACEPTIVE METHOD SUMMARIES

There are many contraceptive options available to adolescents who want to avoid an unintended pregnancy. LARC, the implant and the IUDs, are the most effective methods and should be discussed first when educating teens on all options. Pediatric providers play an important role in helping teens...
choose a method, managing common side effects and supporting teens to change methods when requested. Here we summarize the most common available methods. Advantages and disadvantages of these methods can be found in Table 3.

The Contraceptive implant

**Key points**

- Progestin-only rod. Easy and quick to insert into the arm (Table 4).
- Greatest efficacy of any reversible contraceptive method.
- Primary mechanism of action is prevention of ovulation.

<table>
<thead>
<tr>
<th>Table 3</th>
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<tbody>
<tr>
<td>Contraceptive methods: advantages and disadvantages</td>
</tr>
<tr>
<td><strong>Advantages</strong></td>
</tr>
<tr>
<td><strong>Subdermal implant (contains no estrogen; see Table 4)</strong></td>
</tr>
<tr>
<td>Greatest efficacy.</td>
</tr>
<tr>
<td>High satisfaction and continuation.</td>
</tr>
<tr>
<td>Simple and quick insertion.</td>
</tr>
<tr>
<td>Discreet. Immediate reversibility.</td>
</tr>
<tr>
<td>Relief of dysmenorrhea and endometriosis symptoms.</td>
</tr>
<tr>
<td>No effect on bone density.</td>
</tr>
<tr>
<td>IUDs (contain no estrogen; see Table 5)</td>
</tr>
<tr>
<td>Very high efficacy.</td>
</tr>
<tr>
<td>Discreet. Immediate reversibility.</td>
</tr>
<tr>
<td>Levonorgestrel IUDs: Treatment for bleeding, dysmenorrhea, anemia owing to menorrhagia, and relief of endometriosis symptoms.</td>
</tr>
<tr>
<td>Safe for almost all teens, including those with complex medical conditions. No medication interactions.</td>
</tr>
<tr>
<td>DMPA (contains no estrogen)</td>
</tr>
<tr>
<td>High efficacy.</td>
</tr>
<tr>
<td>Simple and quick injection.</td>
</tr>
<tr>
<td>Discreet.</td>
</tr>
<tr>
<td>Relief of dysmenorrhea and endometriosis symptoms.</td>
</tr>
<tr>
<td>No medication interactions.</td>
</tr>
<tr>
<td>Combined hormonal contraception: OCPs, patch, ring (contain estrogen + progestin)</td>
</tr>
<tr>
<td>Good efficacy when used correctly and consistently.</td>
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<tr>
<td>Widespread familiarity.</td>
</tr>
<tr>
<td>Many noncontraceptive benefits.</td>
</tr>
<tr>
<td>Easy for user to start (and stop)</td>
</tr>
<tr>
<td>Remember each day (pills), week (patch), month (ring).</td>
</tr>
<tr>
<td>Visits to pharmacy for refills.</td>
</tr>
<tr>
<td>Requires storage of medication.</td>
</tr>
<tr>
<td>Increased contraindications and medication interactions.</td>
</tr>
</tbody>
</table>

**Abbreviations:** DMPA, depot medroxyprogesterone acetate; IUD, intrauterine device; OCP, oral contraceptive pill.
Can cause unpredictable, but not dangerous, uterine bleeding. Counseling in advance about unpredictable bleeding, and reassurance during use increases method satisfaction and continuation. Fifty percent of users will have a decrease in their bleeding, including infrequent, minimal, or no bleeding (amenorrhea).

**Mechanism of action**

The implant’s primary mechanism of action is suppression of ovulation. There may be additional efficacy owing to the thickening of cervical mucus and alterations of the endometrial lining. The implant is the most effective method of any contraceptive method. Only 0.05% out of every 100 women experienced a pregnancy during the first year of typical use [24].

**Advantages and method counseling**

The implant is the method of choice for many teens, particularly those ages 14 to 17 years [23]. Insertion is quick and easy and can be done in any outpatient or inpatient setting. A teen can easily palpate her implant and be confident about its presence. The implant can be inserted at any time during the menstrual cycle and same-day insertion is recommended (Fig. 2). Adolescents should be reassured that they do not have to “commit” to 3 years of use, because this may feel daunting to them. The implant can be removed at any time when they request.

**Managing common, expected side effects**

The contraceptive implant causes changes in bleeding patterns that will be unpredictable for the entire duration of use. Episodes of frequent bleeding are more common in the first 3 months, but may continue. When considering a 90-day interval, the bleeding patterns include infrequent bleeding (34%), amenorrhea (22%), prolonged bleeding (18%), and frequent bleeding (8%) [25]. Counseling and education about changes in bleeding patterns before receiving the implant may increase satisfaction and continuation of the method. Because the bleeding pattern in each individual is different, there is no reason to dissuade patients from using this method owing to the possibility of frequent bleeding. In the Contraceptive CHOICE study, 12-month continuation rates for adolescent (14–19 years old) implant users was an impressive 82% [12] despite varying bleeding patterns.

**Table 4**

<table>
<thead>
<tr>
<th>Description</th>
<th>4 cm × 2 mm rod inserted into subdermis of upper, inner arm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>Inactive rod: flexible copolymer (no latex)</td>
</tr>
<tr>
<td></td>
<td>Active hormone: the progestin etonogestrel</td>
</tr>
<tr>
<td>Duration of use</td>
<td>3 y, but can be removed anytime</td>
</tr>
<tr>
<td>Mechanism of action</td>
<td>Prevents ovulation</td>
</tr>
<tr>
<td>Provider training requirement</td>
<td>Manufacturer provides Food and Drug Administration--required free, 3-h long course. Provision should contact Merck to request training.</td>
</tr>
</tbody>
</table>

- Can cause unpredictable, but not dangerous, uterine bleeding. Counseling in advance about unpredictable bleeding, and reassurance during use increases method satisfaction and continuation. Fifty percent of users will have a decrease in their bleeding, including infrequent, minimal, or no bleeding (amenorrhea).
When irregular or prolonged bleeding occurs with ongoing use, reassurance from the entire health care team is crucial, and is usually all that is necessary. Risk for STIs should be assessed, because infections can cause breakthrough bleeding on any contraceptive method. Some patients and providers feel more comfortable after an assessment of hemoglobin, although it is well-documented that hemoglobin levels will increase with implant use despite irregular bleeding patterns [26]. It is also possible to offer medical treatments to control bothersome bleeding. Although studies are scarce, it is reasonable to consider a trial of (1) nonsteroidal antiinflammatory drugs for 5 to 7 days or (2) combined oral contraceptive pills (OCPs) for 10 to 20 days [27,28]. The Centers for Disease Control and Prevention has created an easy to follow algorithm to manage bleeding irregularities while using contraception (Fig. 3). There does not seem to be any danger in long-term use of oral contraceptives in addition to the implant, either continuously or intermittently, to control bothersome bleeding. It is helpful to advise all patients, especially adolescents, to return and discuss any problems with their provider.

**Intrauterine devices**

**Description and mechanism of action**

There are 4 different IUDs now available in the United States, all of which are safe and effective for nulliparous and multiparous women, including adolescents (Table 5). All IUDs produce a sterile foreign body reaction within the uterine cavity that creates a hostile environment for sperm. The contraceptive effects of IUD use occur before fertilization, and therefore IUDs are not...
If bleeding persists, or if woman requests, medical treatment can be considered.¹

- **Cu-IUD users**
  - For unscheduled spotting or light bleeding or for heavy or prolonged bleeding:
    - NSAIDs (5–7 d of treatment)

- **LNG-IUD users**¹⁵
  - For unscheduled spotting or light bleeding or heavy/prolonged bleeding:
    - NSAIDs (5–7 d of treatment)
    - Hormonal treatment (if medically eligible) with COCs or estrogen (10–20 d of treatment)

- **Implant users**¹⁵
  - For unscheduled spotting or light bleeding or heavy/prolonged bleeding:
    - NSAIDs (5–7 d of treatment)
    - Hormonal treatment (if medically eligible) with COCs or estrogen (10–20 d of treatment)

- **Injectable (DMPA) users**
  - For heavy or prolonged bleeding:
    - NSAIDs (5–7 d of treatment)
    - Hormonal treatment (if medically eligible) with COCs or estrogen (10–20 d of treatment)

- **CHC users (extended or continuous regimen)**
  - Hormone-free interval for 3–4 consecutive days
  - Not recommended during the first 21 d of extended or continuous CHC use
  - Not recommended more than once per month because contraceptive effectiveness might be reduced

If bleeding disorder persists or woman finds it unacceptable

Counsel on alternative methods, offer another method, if desired

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Fig. 3. Management of bleeding irregularities while using contraception. ¹ If clinically warranted, evaluate for underlying condition. Treat the condition or refer for care. ¹⁺ Heavy or prolonged bleeding, either unscheduled or menstrual, is common. CHC, combined hormonal contraceptive; COC, combined oral contraceptive; Cu-IUD, copper-containing intrauterine device; DMPA, depot medroxyprogesterone acetate; LNG-IUD, levonorgestrel-releasing intrauterine device; NSAIDs, nonsteroidal antiinflammatory drugs. (From the US selected practice recommendations for contraceptive use. Bethesda (MD): Centers for Disease Control; 2013. Available at: www.cdc.gov/mmwr/pdf/rr/rr6205.pdf.)
abortifacients [29]. The copper IUD causes an increase in copper ions, enzymes, white blood cells, and prostaglandins in uterine and tubal fluids, which impair sperm function and prevent fertilization. Levonorgestrel IUDs have a local effect on the endometrium, causing release of foreign body mediators and suppression of the endometrium. Progestin hormone also thickens cervical mucus and inhibits sperm capacitation and survival. Systemic absorption of levonorgestrel is low and most cycles are ovulatory [30]. IUDs are very effective, with failure rates of less than 1%. The levonorgestrel IUDs have slightly lower failure rates than the copper IUD [21] in adolescents and young adults [31].

**Method counseling**
IUDs are highly acceptable methods of contraception in many adolescents. Time should be taken to educate teens and young adults about their anatomy and the positioning of an IUD in their body. They may have concerns about the IUD “falling out,” “being felt during sex,” or “moving around the body” and these should be addressed with every patient. Using models and pictures can be helpful in allaying their fears about IUD complications.

An IUD can be inserted at any time in a woman’s menstrual cycle as long as the provider is reasonably sure she is not pregnant [27] (see Fig. 2). IUDs can be inserted without a prior pelvic examination and in adolescents who have never been sexually active.

The pain experienced with IUD insertion is rated as tolerable by most women, including teens [32]. Screening for chlamydia and gonorrhea is indicated at least annually for all sexually active teens and can be done at the same visit as insertion even in high-risk adolescents [27]. An IUD does not have to be removed if an STI is detected or even in the case of pelvic inflammatory disease. Treatment can occur with the IUD in place as long as resolution of symptoms is documented [27].

<table>
<thead>
<tr>
<th>IUD name</th>
<th>Mirena</th>
<th>Liletta (generic)</th>
<th>Skyla</th>
<th>Paragard copper T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hormone</td>
<td>Levonorgestrel 52 mg</td>
<td>Levonorgestrel 13.5 mg</td>
<td>No hormone</td>
<td></td>
</tr>
<tr>
<td>FDA-approved duration (y)</td>
<td>5</td>
<td>3* (5 y approval expected)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Effect on menstrual bleeding</td>
<td>Decreased bleeding with continued use; 20% with amenorrhea at 1 y. Evidence-based treatment for menorrhagia and dysmenorrhea.</td>
<td>Lighter periods but amenorrhea less likely.</td>
<td>May have heavier and more painful periods, especially in first 6 mo.</td>
<td></td>
</tr>
</tbody>
</table>

*Abbreviation: FDA, Food and Drug Administration.
*Liletta is identical to the Mirena; ongoing trial to achieve similar, 5-year approval.
Managing common, expected side effects
In the first days and weeks after IUD insertion, there may be bleeding and cramping related to the procedure itself. The risk of complications such as uterine perforation, expulsion, and infection are very low [33–35]. Heavy bleeding, severe pain, nausea, vomiting, or fevers should be evaluated with a complete history and examination including a speculum examination to look for IUD strings and a bimanual examination to assess for infection. There is an increased risk of pelvic inflammatory disease in the first 20 days after IUD insertion. After this point, the risk for pelvic inflammatory disease is the same as an adolescent without an IUD [34].

Users of the levonorgestrel IUD should expect unscheduled bleeding or spotting in the first 3 to 6 months of use. This bleeding is not harmful and will decrease with continued use. Over time, many women experience only light menstrual bleeding or amenorrhea. Patients may need reassurance that this is a safe, expected benefit of levonorgestrel IUD use and that no treatment is needed. STI testing, pregnancy testing, and/or pelvic examination can be done if warranted by history.

Missing strings
There is no evidence-based recommendation to have patients “check their strings” during IUD use. This may be uncomfortable and anxiety provoking, especially for adolescents. However, providers should be able to palpate and visualize IUD strings on pelvic examination. If strings are not visible, a pregnancy test should be done followed by a pelvic ultrasound that confirms the intrauterine location of the IUD. Patients should be encouraged to use another contraceptive method until the IUD location is confirmed. If the IUD is confirmed to be inside the uterus, no other treatment is needed.

Depot medroxyprogesterone acetate
Key points
- Progestin-only injectable contraception given as a single dose every 11 to 13 weeks.
- Very effective method of contraception.
- Continuation at 1 year in adolescents is low.
- Primary mechanism of action is prevention of ovulation.
- Can cause irregular bleeding especially in first 3 to 9 months. Approximately 80% of women will become amenorrheic after 6 to 9 months of continuous use.

Description and mechanism of action
DMPA is available in the United States in 2 formulations that only differ in their routes of administration: DMPA 150 mg/mL (intramuscular) and DMPA 104 mg/.65 mL (subcutaneously) The primary mechanism of action for DMPA is suppression of ovulation. Progestin methods also cause thickening of the cervical mucus to prevent sperm penetration.
Advantages and method counseling

DMPA injection can be done easily in an outpatient, inpatient, or emergency room setting. DMPA can be initiated anytime during the menstrual cycle after a negative urine pregnancy test is obtained. This same-day, quick start protocol for initiation is an important aspect of reducing barriers to contraceptive use (Fig. 4).

DMPA is a progestin-only method and can be used in patients with medical contraindications to estrogen. It can be safely used immediately postpartum and in lactating women. Noncontraceptive advantages include improvement in dysmenorrhea, menorrhagia, protection against endometrial cancer [36], and induction of menstrual suppression. DMPA may reduce seizure activity in certain women with epilepsy [37] and reduce pain crises in women with sickle cell disease [38].

Managing common, expected side effects

The most common side effects are menstrual irregularities and weight gain. The irregular bleeding associated with DMPA use often occurs in the first 3 to 6 months and can be unpredictable and prolonged in duration. Provider reassurance that irregular bleeding is to be expected and is likely to improve may be helpful.

Weight gain on DMPA is unpredictable and may vary widely among different women [39]. Research on weight gain with DMPA is mixed [40], although the Food and Drug Administration package insert reports an average of 5 pounds in the first year. “Early gainers” (gain of 5% of body weight in first 6 months) may be at greater risk for continued weight gain than other users [41]. Anticipatory guidance about nutrition and exercise as well as close monitoring for rapid weight gain is important in adolescents, especially those at high risk for obesity or related morbidities.
The possible effect of DMPA on bone density has caused much concern and unnecessarily restricted its use in many adolescents despite mounting evidence that these effects are reversible and clinical significance is lacking [42]. The American College of Obstetricians and Gynecologists, along with other leading medical groups, state that the effect of DMPA on bone mineral density should not prevent practitioners from prescribing DMPA or continuing its use beyond 2 years, particularly when DMPA is the adolescent’s preferred method [42].

Although DMPA injection is only needed 4 times a year, adolescents often experience problems with continuation. In a recent study looking at use of short-acting birth control methods, only 20% of DMPA users continued this method at 1 year [8]. Adolescents who are having difficulty returning for injections should be strongly encouraged to consider long-acting methods that do not require return visits once inserted.

Combined hormonal contraception

**Key points**
- CHC (oral pill, transdermal patch, vaginal ring) contains estrogen and progestin.
- Typical use failure rates are often high, especially in adolescents.
- Continuation at 1 year in adolescents is low.
- Primary mechanism of action is prevention of ovulation.
- Safe for most teens. Refer to US Medical Eligibility Criteria for Contraceptive Use for contraindications.

**Description and mechanism of action**

CHC refers to methods that contain both estrogen and progestin. This includes OCPs, the transdermal patch, and the vaginal ring. All CHC methods prevent pregnancy by suppression of ovulation. The progestin component of combined hormonal methods provides the majority of its contraceptive efficacy by preventing ovulation via negative feedback on the hypothalamic–pituitary system. The estrogen component is added to stabilize the endometrium and allow for better cycle control. Medical eligibility and risks are also similar among all combined hormonal methods and should be discussed with patients. The incidence of venous thromboembolism and stroke are slightly increased among users of CHC [43], but the benefits of use outweigh these risks for most adolescents [27].

Although there are more than 70 different combined OCPs available in the United States, the only major differences are in estrogen dose, progestin type, and packaging regimen of active and placebo pills. Efficacy and side effects among pills are comparable.

The transdermal contraceptive patch is marketed as Xulane, a generic version of the OrthoEvra patch, which is no longer available. It is a thin, beige adhesive patch that contains ethinyl estradiol and the progestin norelgestromin. It can be applied to the torso, buttocks, or upper arms and needs to be changed each week.
The vaginal contraceptive ring (NuvaRing) is a soft, flexible 54-mm diameter ring that releases ethinyl estradiol and the progestin etonogestrel. The ring is inserted by the user into the vagina and needs to be removed and replaced monthly. It is important to assess the adolescent’s comfort in insertion and removal before prescribing, and also ensure that the user is aware that the ring is not a barrier method, does not prevent STIs, and needs to be used as directed to be effective.

Extended or continuous cycling can be used with all CHC and may provide contraceptive as well as noncontraceptive benefits. Research suggests that extended cycling may provide greater suppression of the ovaries and the endometrium, leading to better control of gynecologic conditions and increased contraceptive efficacy. Reducing period frequency can also reduce the frequency of estrogen withdrawal symptoms and menstrual associated disorders [44], including premenstrual syndrome, dysmenorrhea, and menstrual migraines. Tables 6 and 7 outline several recommended practices for prescribing CHC.

Managing common, expected side effects

In the first 3 months of CHC use, unexpected bleeding is not uncommon. Providers should confirm correct usage and reassure that the bleeding should resolve with continued and consistent use. Setting a daily alarm on the user’s mobile phone, or signing up for a free text message reminder can be helpful for some teens. Providers should consider pregnancy testing and test for STIs if appropriate. Adolescents that have difficulty with consistent use of these methods should be encouraged to consider other methods, specifically LARC.

Progestin in CHC causes thinning of the endometrial lining and can result in amenorrhea for some users. If the teen is using the method correctly and consistently, there is no danger to this side effect and reassurance can be given as long as pregnancy is ruled out. OCP users who would prefer to have a monthly period can try switching to a different brand of pill.

Users of extended or continuous CHC should expect unscheduled bleeding, especially in the first 4 months of use. This can be due to thinning and instability of the endometrial lining. Users can either (1) continue on the method as previously instructed and expect some continued bleeding, (2) take a 5-day break (and then restart) to allow for a withdrawal bleed, or (3) try a 5-day course of nonsteroidal antiinflammatory drugs. These options are outlined in the Fig. 3, an algorithm from the Centers for Disease Control and Prevention.

### Table 6

<table>
<thead>
<tr>
<th>Best practice for prescribing combined hormonal contraception</th>
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<tbody>
<tr>
<td>Dispense</td>
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<tr>
<td>Refills</td>
</tr>
<tr>
<td>Getting started</td>
</tr>
<tr>
<td>Tips for consistent use</td>
</tr>
</tbody>
</table>
MENSTRUAL SUPPRESSION

Even in the absence of a significant gynecologic condition, many adolescents prefer to have fewer or no periods once they are aware that there are no safety concerns, and specifically no impact on their future fertility. This can be accomplished with many available contraceptive methods.

Adolescents who choose progestin-only methods should be counseled in advance that no bleeding (amenorrhea) or lighter, fewer periods is an expected and common benefit to use, with corresponding lower rates of anemia in users [45]. The levonorgestrel IUD and Depo Provera achieve high rates of amenorrhea with continued use and are ideal methods for patients who would enjoy fewer or no periods. Amenorrhea with the implant is less predictable and only occurs in about 20% of users.

CHC can also be used to induce amenorrhea secondary to the progestin dominant effect on the endometrium. Extended or continuous dosing can be offered based on the patient’s preference for frequency of periods along with counseling about the potential for unscheduled bleeding. Table 7 reviews these options and patient instructions for use. About 50% of women will achieve amenorrhea with continuous use of OCPs at 1 year, and an additional 25% will report only light bleeding. Bleeding that occurs after prolonged use of CHC can be treated with a 5-day withdrawal of the medication.

COMPLEX MEDICAL CONDITIONS

A safe and effective contraceptive option exists for all adolescents, including those with complex medical conditions. Sexual activity among teens with
Table 8
Contraception and considerations in adolescents with disabilities

<table>
<thead>
<tr>
<th>Method</th>
<th>Comments on menstrual regulation with method</th>
</tr>
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</table>
| Levonorgestrel IUD | First-line for contraception.  
Very few medical contraindications.  
Placement may require anesthesia.  
Excellent option for menstrual suppression; amenorrhea rates up to 50% at 1 y; decreased flow in almost all users. Initial bleeding/spotting should be expected for first 3 mo of use. |
| Copper IUD   | First-line for contraception.  
Very few medical contraindications.  
Placement may require anesthesia.  
No reduction in menstruation; may have increased bleeding/cramping. |
| Implant      | First-line for contraception.  
Very few medical contraindications.  
Placement is quick and easy but does require patient’s cooperation.  
Amenorrhea occurs in some (20% at 1 y) but unpredictable bleeding is common and should be expected. |
| DMPA         | Effective contraception.  
Few medical contraindications.  
Efficacy not affected by anticonvulsants.  
Concerns about weight gain and bone mineral density may limit use, but are not absolute contraindications if DMPA best option available.  
Injection every 3 mo; patient cooperation necessary.  
Amenorrhea in 50%–80% after 1 y of use, but initial bleeding very common. |
| OCPs         | Effective contraception if taken correctly and consistently.  
Refer to the USMEC for contraindications to use. Increased VTE risk in adolescents with limited mobility is a consideration but risks unknown.  
Avoid with certain anticonvulsants owing to decreased contraceptive efficacy.  
Pill must be taken each day. Can be crushed for G-tube.  
Amenorrhea in 50% at 1 y using continuous dosing. Break-through bleeding occurs most often if first 3 mo of use. When bleeding occurs with prolonged use, can often manage with a 5 d break to allow for a withdrawal bleed and then restart. |
| Patch        | Effective contraception if used correctly and consistently.  
Refer to the USMEC for contraindications to use. Increased VTE risk in adolescents with limited mobility is a consideration but risks unknown. Total estrogen exposure is higher with patch than OCP.  
Avoid with certain anticonvulsants owing to decreased contraceptive efficacy.  
New patch applied each week; patient cooperation required so patch is not removed.  
Amenorrhea rates with continuous use comparable with OCPs. |

Abbreviations: DMPA, depot medroxyprogesterone acetate; IUD, intrauterine device; OCP, oral contraceptive pill; USMEC, US Medical Eligibility Criteria for Contraceptive Use; VTE, venous thromboembolism.
medical conditions may occur at the same rate as their healthy peers. Furthermore, reproductive health outcomes such as unplanned pregnancy and untreated sexually transmitted disease might have an even greater impact on long-term health.

The US Medical Eligibility Criteria for Contraceptive Use was developed by the Centers for Disease Control and Prevention and the World Health Organization. It provides evidence-based guidance for safe contraceptive use in women, including adolescents, with medical conditions. The US Medical Eligibility Criteria for Contraceptive Use is available on-line at www.cdc.gov and can be downloaded as a free application for mobile devices. This tool is easy to use, and can provide an immediate, direct answer to common clinical questions.

PHYSICAL AND DEVELOPMENTAL DISABILITIES

Similar to their peers, adolescents with physical and developmental disabilities need reproductive health care. Many disabled teens can consent to sexual activity and desire contraception. Furthermore, caregivers may request contraception because of concerns about the risk of sexual abuse or assault. Menstrual suppression or reduction is also a common request from teens with developmental and physical disabilities and their families (Table 8).

Safety of the teen’s environment and abuse prevention should be discussed with all teens and their families. Abusers can exploit physical and developmental disabilities, and victims may be less able to communicate that the abuse occurred. Studies show that rates of sexual abuse in children with disabilities are significantly higher than their nondisabled peers, especially those with primary or comorbid behavioral disorders [46]. Disabled teens in a romantic relationship are at greater risk for dating violence than their peers [47]. Pediatric providers who care for adolescents with disabilities are well-equipped to provide appropriate counseling and recommendations for contraception based on the individual adolescents needs.

SUMMARY

Pediatric providers are instrumental in educating adolescents about their contraceptive options and supporting them to obtain and continue their preferred method. LARC has an overwhelming potential to reduce unintended teen pregnancy, which in the United States remains at the highest rate of any developed nation. Contraceptive counseling should be developmentally appropriate, and follow best practices that encourage initiation and continuation of birth control methods.

References


