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Use of long-acting reversible contraceptives to reduce the rate of teen pregnancy

ABSTRACT

Long-acting reversible contraceptives (LARCs) are safe for use in adolescents and do not rely on compliance or adherence for effectiveness. Continuation rates are higher and pregnancy rates are lower for adolescent users of LARCs compared with short-acting methods such as oral contraceptives. Similarly, repeat pregnancy rates are lower when LARCs are used compared with other forms of contraception. Myths and misconceptions about LARCs and other contraceptives remain a barrier to their use. Health care providers are in a unique position to provide confidential care to adolescents, and should provide education to them about the various contraceptive options, especially LARCs.

Adolescents who are at risk of unintended pregnancy need access to highly effective contraceptives. Using a case study format, this article addresses the myths, misconceptions, and barriers to effective use of contraceptives, focusing on long-acting reversible contraceptives (LARCs) and suggesting ways to overcome these barriers.

CASE 1: TEEN WITH DYSMENORRHEA

Jessica is a 15-year-old girl presenting with complaints of severe cramps, causing her to miss school and other activities 3 to 4 days each month. She has had six sexual partners and believes that contraception would be a good idea. She also states that she hates shots and doesn't swallow pills well. She asks you to help. What are her/your options?

In this case, options include chewable oral contraceptives, a contraceptive patch, the etonogestrel/ethinyl estradiol vaginal ring (NuvaRing), depot medroxyprogesterone acetate (DMPA; progestin-only, injectable, lasts 3 months), and LARCs, which are intrauterine systems (IUS), intrauterine devices (IUDs), and implants. If she can remember a chewable pill every day, that would be one option. The patch requires her to remember to change it weekly. The vaginal ring requires ability and motivation to insert and remove it vaginally each month. She has stated that she does not want shots, so DMPA is not a viable option.

In contrast, LARCs constitute "forgettable" contraception in that they are not dependent on daily or monthly investment of time and energy to use. With her dysmenorrhea, use of an LARC that contains a progestin to thin out her lining and/or induce amenorrhea has some additional advantages.

The Institute of Medicine has declared that expanding access to LARCs for young women is a national priority.[1] In 2009, the American College of Obstetricians and Gynecologists encouraged implants and IUDs for nulliparous women and adolescents.[2] The following review describes currently available LARCs.

Intrauterine systems (IUS)

The levonorgestrel-releasing IUS (Mirena) was approved by the US Food and Drug Administration (FDA) in 2000. It maintains efficacy for 5 years and has a failure rate of 0.2%. Contraception is reversible with its removal. The system consists of a small T-shaped frame with a steroid reservoir that releases 20 µg/day of levonorgestrel, resulting in high endometrial levels and low plasma levels of levonorgestrel. An alternate brand available in the US is Skyla, notable for its slightly smaller size, slightly higher expulsion rate, and similar side effect profile to Mirena.

The copper in the levonorgestrel-releasing IUS acts as a spermicide. The progestin thickens the cervical mucus and thins the endometrial lining to cause a

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marked reduction in uterine bleeding. Between 20% and 80% of recipients experience amenorrhea by 1 year.[3–5] It is considered safe and effective, it provides prolonged relief of menstrual problems including menometrorrhagia. Because it contains only progestin, it can be used while breastfeeding. One drawback is the skill needed to insert the device, necessitating insertion by a clinician. Side effects include early spotting and rare instances of perforation of the uterus.[3]

Intrauterine devices (IUD)

The copper IUD (Paragard) was FDA approved in 1989 for 10 years of use, but it has been used off label for up to 12 years continuously. It is preferred by women who want to avoid hormones while achieving similar results as the levonorgestrel-releasing IUS, including reductions in menstrual bleeding. The copper IUD can be used in women with a history of ectopic pregnancy. Fertility returns after removal of the device. Its use has been associated with a reduction in the risk of endometrial cancer,[6] which may be related to prevention of human papillomavirus infection. Insertion of the copper IUD is a relatively simple office procedure.

Implants

The etonorgestrel single-implant system (Implanon, Nexplanon) is a single rod containing 68 mg of the progestin etonorgestrel, which is the biologically active metabolite of desogestrel. The single rod eases implantation and removal compared with previous systems that contained six rods. The implant was FDA approved in 2006 but has been marketed worldwide since 1998. Nexplanon contains a single, radiopaque rod that is easier to localize and remove.

The duration of contraceptive efficacy for Nexplanon is 3 years. Etonorgestrel levels are undetectable within a few days of reversal. Breakthrough bleeding can occur, and depression and mood swings are potential side effects that are manageable with close follow-up. The implants can be removed at any time.

If breakthrough bleeding occurs while on progestin-only methods, an intermittent solution is to add estrogen by pill or patch for 3 weeks and then withdraw the estrogen until bleeding again occurs. This practice is usually not necessary by 12 months after implantation.

Implant use can reduce the repeat pregnancy rate among adolescents. In one study, researchers found that teenage mothers who chose a contraceptive implant during their first year postpartum, including the 37% who discontinued use, had a 2-year repeat pregnancy rate of 12% versus 46% among mothers using no method or other methods of contraception.[7]

Barriers to LARC use

Among adolescents attending an integrated prenatal and postpartum maternity clinic, 75% indicated intent to use LARCs postpartum. Approximately one-third chose an implant, one-third chose an IUS, and one-third chose either DMPA, oral contraceptives, a contraceptive patch, or a contraceptive ring. After 6 months, only 50% had received an LARC, leaving one-third at risk for rapid repeat pregnancy.[8]

Unfortunately, the safety, side effects, and efficacy of LARCs may be misunderstood by both clinicians and teens. A negative personal experience may dominate one's thinking and act as a barrier to use. The adolescent may not be mature enough to understand the chance of pregnancy or its consequences. Use of an IUD or IUS requires planning, a visit to a clinic that can insert the device, and a substantial up-front expenditure, even though the average cost per year compares favorably to use of DMPA or oral contraceptives.

Lack of awareness of LARCs is another barrier to their use. Between 50% and 60% of young women have never heard of an IUD and 90% have no awareness of contraceptive implants.[9–12] Of those who knew about them, only 25% knew that they were eligible to use LARCs.[13]

In addition, many practitioners still mistakenly believe that current IUDs can cause pelvic inflammatory disease (PID), despite there being no association between modern IUDs and PID after the first 20 days following insertion.[14–16]

Physicians may also be unaware of the medical eligibility criteria (MEC) for contraceptive use established by the World Health Organization (WHO) and the US Centers for Disease Control and Prevention (CDC).[15,16] Conditions affecting eligibility for the use of each contraceptive method are classified under four categories (**Table 1**).

Overall efficacy

The effectiveness of LARC use in young women has been established. In one large study,[17] 4,167 females aged 15 to 45 were offered contraception at no cost for 3 years. Of those who chose an LARC, the 12-month continuation rate was 86% compared with 55% among those choosing an oral contraceptive. Satisfaction rates reflect the continuation rates with more than 80% of LARC users being satisfied compared with 54% of oral contraceptive users being

TABLE 1
Categories of medical eligibility criteria for contraceptive use

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.

The US medical eligibility criteria (MEC) presents recommendations for the use of contraceptive methods for specific populations. It was created by the CDC in 2010 using criteria developed by the World Health Organization.[16]

satisfied. The pregnancy rate was 22 times greater in women using short-acting contraceptives compared with LARC users. In women younger than 20, pregnancy rates were twice as high among oral contraceptive users.[4,18]

Case conclusion

Jessica chooses an IUS, and her adolescent-medicine physician inserts Mirena at her next visit. She has some irregular bleeding during the first 3 months, but by 1 year, she is having periods only every 5 to 6 months. She manages cramps with ibuprofen 400 mg orally every 6 hours and is careful not to miss ibuprofen doses when she starts cramping or bleeding. She has not had sexual activity since the insertion, but she plans to always use condoms when she chooses to have sex. At her 3-month visit after insertion, when considering whether to remove or continue with her IUS despite her initial unscheduled bleeding, she discusses the flexibility of IUS to allow her to change her mind: "It's like changing my hairstyle; I can just come back and change it in 3 months or even sooner if it is really bothering me. I don't have to think of it as permanent, just less of a daily bother." She is pleased with her choice of LARC and plans to return in 6 months for follow-up.

CASE 2: TEEN REQUESTS RELIABLE CONTRACEPTION

Danielle is a 16-year-old nulliparous female currently using condoms for contraception but wants a more reliable method. Her options include an IUD/IUS (MEC 2 for women younger than 18 years), a contraceptive implant (MEC 1 for all ages), DMPA (MEC 2 for women younger than 18 years), and combined oral contraceptives (MEC 1 for all ages).

The use of DMPA by teenagers is worrisome because users experience a loss of 1% to 3% of bone mineral density (BMD) over 1 year, although BMD is regained after discontinuation.[19] Whether BMD relates to fracture risk in adolescents is unclear, but there is no evidence that DMPA increases the risk. Nevertheless, a baseline BMD measurement repeated every other year is recommended for thin females taking DMPA. To slow potential bone loss, daily exercise and age-appropriate calcium and vitamin D intake should be encouraged in teens, who often do not get enough calcium.

Obese adolescents who use DMPA are more likely to gain weight than nonobese DMPA users and obese users of other contraceptive methods.[20] Obese adolescents who use DMPA can gain as much as 10 kg.[21]

Any of the methods mentioned are options for contraception for Danielle, with continued use of condoms and counseling about dual protection. Compliance with the method chosen should be assessed at every visit.

Case conclusion

Danielle chooses DMPA, and in the first 6 months, she gains 20 pounds. She is frustrated by the weight gain and chooses to change to the contraceptive implant. She continues to use condoms always and remains satisfied with her choice 1 year later.

CASE 3: TEEN WITH HISTORY OF MULTIPLE SEXUAL PARTNERS

Yolanda is a 17-year-old female with a history of multiple sexual partners who lives in an area of high human immunodeficiency virus (HIV) presence. In addition to strong and supportive counseling about risk reduction and condom use, she also needs a highly effective contraceptive method. Available options include progestin-only implants, progestin-only injectables, and combined hormonal methods.

In 2010, the CDC and WHO stated that women at high risk of HIV and those already positive for HIV or acquired immunodeficiency syndrome (AIDS) are eligible for LARC use (MEC category 1).[16] In January/February 2012, the recommendations were updated to address several key questions about hormonal contraception and HIV, including the risk of HIV acquisition in noninfected women, the risk of HIV disease and progression among HIV-positive

women, the risk of transmission from infected to noninfected male partners, and the potential for interactions between hormonal contraception and antiretrovirals.

The revisions declared that contraceptive implants, injectables, pills, and IUDs/IUSs were still usable with HIV risk, HIV positivity, and AIDS, but that women using progestin-only injectable contraception should be strongly advised to also always use condoms (male or female) and other HIV preventive measures.[22]

Case conclusion

Yolanda chooses an IUS, which she uses successfully for the next few years. She uses condoms sporadically, but has fewer partners per year than in prior years. At last screening, she was HIV negative. Motivational interviewing and counseling are used to increase her condom usage and to decrease the number of partners with whom she has sexual activity. Her knowledge of sexually transmitted infections and contraceptive efficacy has increased, and she is less ambivalent about navigating condom use with her current partner. She is scheduled for monthly visits to continue to work on motivation to use condoms consistently in order to remain HIV negative.

DISCUSSION

Where LARC access is widespread and sex education is comprehensive, teen pregnancy rates and abortion rates tend to decline. An initiative to increase LARC use in 13 countries with significant need for contraceptives but with low IUD use resulted in significant increase in their use.[23] Initiatives were tailored to each of the countries using a variety of models and means of distribution to provide LARCs. The data suggest that creating demand and linking it with delivery can significantly increase LARC use.

Prevention of disease, teen pregnancy, and sequelae of disease are goals of enhancing adolescent access to LARCs. To achieve this, LARCs should be prescribed before patients need them. Teachable moments, such as patients presenting with potential pelvic inflammatory disease or asking for a pregnancy test, should be recognized. Discussions with these patients should present the pros and cons of LARCs along with addressing any barriers they have to their use.

Educate not just colleagues but pharmacists, parents, patients, schools, and communities. Employ and engage social media tools to remind adolescents to be safer. Do not allow barriers to prevent LARC usage, and train residents and students to do the same.

SUMMARY

Adolescents who are at risk of unintended pregnancy need access to highly effective contraceptive methods. For adolescents eligible to use all methods of contraception, LARCs are safe and may be particularly suitable for this population. Dual protection should be encouraged for adolescents.

Myths and misconceptions about all contraceptives, including LARCS, remain barriers to effective use. Health care providers are in a unique position to provide confidential care to adolescents and to educate youth about the various contraceptive options while separating myth from fact. Use of LARCs requires the patient's consent, access to care, and affordable options. This requires clinicians to be knowledgeable about the most recent data on contraceptive efficacy and side effect profiles.

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