



## Editorial

## What Is LARC? And Why Does It Matter for Adolescents and Young Adults?

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For those of us who are old-timers, the term LARC may have snuck up on us. It stands for long-acting reversible contraception, and I think of it as a rebranding of intrauterine devices (IUDs) and a recategorization of subdermal implants. Rebranding is probably appropriate for reestablishing the tarnished or lost reputation of the IUD. Although today's adolescents (and even today's medical students) have no recollection of the risks and hazards of the Dalkon Shield IUD used in the 1960s and 1970s, older clinicians (as well as some of the mothers and grandmothers of today's teens) do. This memory and ugly legacy have posed a barrier to the use of today's modern contraceptives. But these are not your mothers' IUDs; they are superbly effective (as effective as permanent sterilization) and safe as well. The efficacy and safety benefits apply not only to older women, but also to adolescents and nulliparous young women. I hope that the evidence in this supplement will convince you of this.

In addition, LARC includes the newest incarnation of subdermal implants—which are also a “new generation” of implants. When I first heard the term LARC, I had an image—I believe that it was of a Western Meadowlark. And in my recent travels and talks around the country, when I talk about contraception for adolescents, I still ask for a show of hands to tell me who has heard of LARC; in many audiences, only a few people (usually those of the family-planning persuasion) raise their hands. But it's not a term we want to keep secret—in fact, we want to shout it from the rooftops: LARC = long-acting reversible contraception!

What is the rationale for LARC? Oral contraceptives have been the most frequently used current contraceptive method among sexually active adolescents, used by 54% [1]. Approximately 56% of all sexually experienced adolescent females have ever used oral contraceptives [2]. IUDs were used by 3.6% of those who were using contraception in 2006–2008, up from a statistically unreliably small percentage reporting use in 2002 [1]. The effectiveness of a contraceptive method depends on the user's adherence to correct, consistent, and ongoing use. Although oral contraceptives are popular among adolescents, up to 60% of

adolescents have discontinued using oral contraceptives at the end of a year after initiation [3]. Adolescents are more likely to discontinue their method than are older women [4]. Even adolescents who continue to use the pill frequently miss pills, missing two or more pills a month in one study [5]. Fifty percent of young women report imperfect use during a pill cycle [6,7]. The challenges of adherence to a given method of contraception are seen in the gaps between “perfect use” failure rates and failure rates given “typical use” [8]. Thus we see a clear need to move toward methods of contraception that are “forgettable” and easier for adolescents (and adult women) to use. The LARC methods have a very narrow gap between typical use failure rates and perfect use.

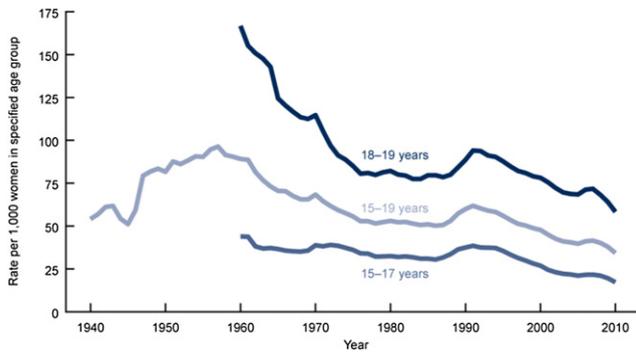
The imperative for more effective and easier-to-use methods of contraception for adolescents is seen in the rates of adolescent pregnancy in the United States. Although adolescent birth rates have dropped markedly since their high in the 1950s to a historic low in 2010 (Figure 1), the U.S. rates of teen pregnancy, birth, and abortion are substantially higher than in other industrialized countries (Figure 2) [9,10]. About 3 of 10 girls get pregnant before the age of 20. Although the progress made toward lower birth rates should be applauded, it is still our national shame that so many other countries are doing a better job of protecting their children and helping teens protect themselves from the risks and hazards associated with teen pregnancies.

Adolescent pregnancies and childbearing have remarkable impacts on individual teens (both teen mothers and teen fathers), their children, and on our society. Only 40% of teen mothers graduate from high school, and less than 2% of those who have a baby before age 18 finish college by age 30 [11]. The children of adolescent mothers are more likely to face health problems from the time of birth, including greater risks of prematurity, low birth weight, and their sequelae [12]. They suffer higher rates of abuse and neglect, are more likely to become teen mothers themselves if female, or to end up in prison if male [12]. The cost of teen childbearing to U.S. taxpayers was nearly \$11 billion in 2008 [13]. Most of the costs are associated with the negative consequences for the children of teen moms for public health, child welfare, incarceration, and lost revenue because of lower earnings of these children with lower educational achievement.

IUDs and subdermal implants have the highest rates of both satisfaction and continuation rates of all reversible contraceptive methods [14]. The American Congress of Obstetricians and Gynecologists, in the Committee Opinion on Intrauterine Device and Adolescents, concluded that “because adolescents contribute

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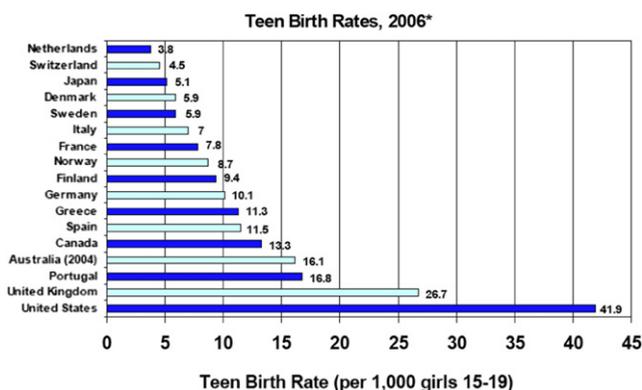
P.J.A.H. has received compensation for consultation and services as a scientific advisor with Bayer HealthCare Pharmaceuticals as well as lecture fees from Merck as an etonogestrel-implant trainer. Teva Pharmaceuticals has provided research funding to Stanford University School of Medicine for participation in a multi-institution study for which she has served as an institutional co-principal investigator. P.J.A.H. wrote the editorial. No honorarium, grant, or any form of payment was given to anyone to produce the manuscript. Publication of this article was funded by The National Campaign to Prevent Teen and Unplanned Pregnancy.



**Figure 1.** Birth rates for women aged 15–19: United States, 1940–2010, and by age, 1960–2010. Data for 2010 are preliminary. Source: CDC/NCHS, National Vital Statistics System.

disproportionately to the epidemic of unintended pregnancy in this country, top tier methods of contraception, including IUDs and implants, should be considered as first-line choices for both nulliparous and parous adolescents. After thorough counseling regarding contraceptive options, health care providers should strongly encourage young women who are appropriate candidates to use this method” [15].

In the Contraceptive CHOICE Project, in which cost barriers for use of all contraceptive methods were removed, 69% of 14–17 year olds chose a LARC method, as did 61% of 18–20 year olds [16]. When adolescents are provided with authoritative counseling and information about these methods, they are happy to choose and to use them successfully. Notably, a recent prospective study of CHOICE project participants compared contraceptive failure rates for women less than 21 years of age and older study participants; the investigators found that young women who were using pills, patches, and rings had a risk of unintended pregnancy that was almost twice as high as the risk among older participants using those methods, whereas rates of unintended pregnancy were similarly low among young and older women using depo-medroxyprogesterone acetate injection or LARC methods [17]. A take-home message for both clinicians and teens is that the risk of contraceptive failure with pills, a patch, or a vaginal ring is 20 times as high as the risk of unintended pregnancy with a LARC method [17].



**Figure 2.** Teen birth rates: how does the United States compare? From The National Campaign to Prevent Teen and Unplanned Pregnancy, <http://www.thenationalcampaign.org>. \*All birth rates for 2006 unless otherwise noted. Source: United Nations Statistics Division. (2006). *Demographic yearbook 2006*. New York: United Nations.

I also want to note one additional consideration for clinicians to keep in mind when caring for adolescents. The copper IUD is a vastly underused but very effective option for emergency contraception. Emergency contraception has been described as an important resource for addressing situations that happen frequently to teens: failure to use a method of contraception, failed methods (condoms that slipped off or broke), and the situation that “inclination and opportunity unexpectedly converge” [18]. It is unfortunate that political considerations have impacted availability of over-the-counter oral emergency contraceptive options, making a “last chance to prevent unintended pregnancy” more difficult for teens [19]. (This online review article summarizes a wide range of research on emergency contraceptive pills. It presents information on drug interactions, barriers to widespread use of the method, the impact that the method has on population, and over-the-counter access; more than 150 references are cited.) In one study in which research assistants posing as adolescents called pharmacies to request information about emergency contraception, they were given correct information about age restrictions for over-the-counter availability in only 50% of pharmacies in low-income neighborhoods—sites with arguably a greater need for accurate information from pharmacies; in 19% of calls, the adolescent was incorrectly told that she could not obtain emergency contraception under any circumstance [20].

A systematic review of 35 years of experience with IUDs for emergency contraception concluded that copper IUDs are highly effective when inserted within 5 days after the event requiring emergency contraception, whether it be unprotected intercourse, rape, or a failed method (broken or displaced condom). The authors urged that they be included among the available options for emergency contraception [21]. A recent survey concluded that a large majority (85%) of experienced family planning clinicians surveyed had never offered a copper IUD in the setting of a need for both emergency and ongoing contraception [22]. Changes in scheduling, funding, and clinic flow will likely be required to allow same-day IUD insertions for emergency contraception; in order for these changes to begin to be implemented, we clinicians should recognize that this option can be a good one for individual teens and begin to advocate for the systemic changes that will be required for wider implementation.

It is my pleasure to introduce this supplement to the *Journal of Adolescent Health* with the theme of Long-Acting Reversible Contraception for Adolescents and Young Adults. The National Campaign to Prevent Teen and Unplanned Pregnancies, which continues to do remarkable work to address this huge national problem, has funded this supplement of the journal. For a fun website review, visit the site sponsored by The National Campaign for 18–25 year olds at <http://www.bedsider.org>. For our patients, the Method Explorer on the site provides helpful and accurate information in a user-friendly format, along with segments highlighting Fact or Fiction. From the site, there is also a way to text or e-mail a reminder for the pill, the patch, the ring, and the shot, a feature that can potentially help our patients to successfully use these methods. Check out the Bedsider public service announcement videos on YouTube, sponsored by The National Campaign, that show awkward intimate moments, with the message: “You didn’t give up on sex; don’t give up on birth control. There are more methods than you think. Find yours at [bedsider.org](http://bedsider.org).”

For this supplement, I have had the pleasure to invite nationally and internationally known experts to provide up-to-date reviews on the subject of LARC for adolescents and young

adults. These experts have responded with superbly well-written manuscripts, which will be important references for future scholarship and will inform our clinical actions. Let me introduce the topics and the authors.

Dr. James Jaccard and his coauthor have written a remarkably thorough review entitled “Counseling Adolescents About Contraception: Towards the Development of an Evidence-Based Protocol for Contraceptive Counselors” [23]. Jaccard is currently professor of Social Work at New York University, and professor, Department of Psychology at Florida International University in Miami. His background and training are as a social-developmental scientist with specialties in attitude change and decision-making, particularly as they relate to unintended pregnancies. He has written extensively, but because his work is in the areas of social work and psychology, clinicians may be less familiar with his writing; I will confess that I had not read his work previously. But I will in the future. In this review, he and his coauthor Nicole Levitz, who has a background in reproductive health with a public health perspective (with an M.P.H., she is a self-described “mistress of public health”), provide a thorough summary of the evidence supporting methods of contraceptive counseling. They indicate that there is a need for a great deal more evidence to support what is important and effective in contraceptive counseling. They list principles that make sense for clinicians to implement and strategies for clinics to implement that would provide a strong practical basis from which to provide effective counseling while additional evidence is gathered.

Drs. Melanie Gold and Family Planning Fellow Jennefer Russo, along with Dr. Elizabeth Miller, thoroughly review the topic of myths about LARC methods [24]. Gold has long been a huge champion of effective contraception for teens, with a focus on longer-acting methods and emergency contraception. She has provided a scholarly voice of advocacy for methods that work for adolescents, and thus is the perfect person to focus on myth busting. This review can serve as a primer for both talking to teens and talking to our colleagues in other disciplines about effective long-acting contraction. The myths that are addressed in this review are commonly held, and the authors provide evidence to counter the misperceptions. Miller’s contribution to this review provides a perspective and reminder that LARC may be particularly relevant for adolescents in unhealthy and abusive relationships in which sexual coercion and contraceptive sabotage can undermine other methods of contraception.

Whenever the topic of IUDs for adolescents and young adults (or more specifically young nulliparous women) is raised among a group of clinicians—be they family physicians, pediatricians, or obstetricians-gynecologists—the biggest concern is often the worry that if a sexually transmitted infection (STI) is acquired, the individual will be at greater risk of developing an ascending pelvic infection, clinically apparent as pelvic inflammatory disease, with a consequently high risk of subsequent infertility. Because this age group constitutes the group at highest risks for acquiring STIs, and because of the lingering legacy of the Dalkon Shield and severe pelvic infections, IUDs are suspect. Dr. Eve Espey, well-known in family planning circles for her scholarly writing and advocacy for the integration of family planning education into the medical school curriculum nationally, and Dr. Shannon Carr, family planning fellow at the University of New Mexico, review the evidence that allows us to conclude that “IUDs don’t cause PID; STIs do” [25]. The American Congress of Obstetricians and Gynecologists has reinforced this conclusion, stating that “there are no studies demonstrating an increased

risk of pelvic inflammatory disease (PID) in nulliparous IUD users, and no evidence that IUD use is associated with subsequent infertility” [26]. A clear understanding of the risks will allow clinicians to understand that although young women certainly need to protect themselves from STIs, this does not mean that IUD use should be precluded for this age group.

Which brings us to the topic of the next review: condoms and “dual use” of LARC and barrier methods. Drs. Dennis Fortenberry and colleague Rebekah Williams at Indiana University have done some of the pioneering research related to teasing out the details of factors that impact adolescents’ risks of STIs and inform their contraceptive choices and use. Sexual behaviors and condom use are critically important to adolescents’ and young adults’ overall reproductive health, and thus Dual Use of Long Acting Reversible Contraceptives and Condoms is an important topic to review [27]. The authors point out that the rates of both LARC and dual-method contraception are low in the United States, but have increased in the last few years. They note that consistent condom use is a major barrier to dual use because it necessitates admission of STI risk by both partners, and is also dependent on two decision-makers. Individualized, longitudinal reinforcement and social support are required to help individuals successfully maintain contraceptive and STI prevention behaviors and thus reduce their risks of unintended pregnancy and STI.

More adolescents are now choosing LARC methods than in the recent past; LARC methods were used by 4.5% of adolescents currently using contraception, according to data from the 2009 National Survey of Family Growth [28]. However, awareness of LARC among teens and young adults is relatively low. Dr. Stephanie Teal and Elizabeth Romer, FNP, review the topic of Awareness of Long-Acting Reversible Contraception Among Teens and Young Adults [29]. Teal, at the University of Colorado, has most recently published important work on the use of LARC in postpartum adolescents. These authors point out that although there is modest awareness of IUDs, adolescents are less aware of the implant, and awareness of a contraceptive method does not predict accurate medical information about it. Additional challenges to increasing use of these very effective and safe LARC methods include both lack of clinicians’ recommendations for these methods and lack of accurate information provided by the media. The authors describe a discouraging cycle in which clinicians who are not sure of the suitability of IUDs for adolescents/young adults do not increase the awareness of and accurate knowledge about these methods for their patients, and these patients do not have enough information to ask for them, leading finally and circularly, to a perception among the clinicians that patients are disinterested.

Beyond lack of awareness of LARC methods of contraception, adolescents may be deterred from LARC methods in general, and IUDs in particular by fears about the process of insertion. Pain with IUD insertion has been variably described as ranging from “discomfort” to severe. Practical Tips for IUD Use in Young Women reviews the evidence related to the use of techniques to facilitate insertion for clinicians and to improve tolerance of the insertion process for young women [30]. Although I have included and cited the currently available evidence, some of the tips that are included in this review are not evidence-based, but derive from the author’s clinical experience—i.e., my own. I welcome a discussion of alternative views and experiences, and I am eager to see the accumulation of evidence that will further guide our abilities to ease this procedure for our young and often anxious patients.

Dr. Alison Edelman and Dr. Maureen Baldwin, Family Planning Fellow, who works with Edelman at Oregon Health and Science University have completed an excellent review on the role that LARC can play in decreasing rapid repeat pregnancies in adolescents [31]. Edelman is a nationally recognized contributor to the field of family planning, with scholarly publications that focus on the impact of obesity on the metabolism of hormonal contraceptives, issues in adolescent gynecology, and pain relief for intrauterine procedures, including IUD insertion. Adolescent mothers are at high risk for having a repeat pregnancy, and the authors describe the risk factors, the complicating factors of pregnancy intendedness and ambivalence, the effects of LARC as well as the data around timing of placement. The authors highlight areas for future research. It is certainly becoming apparent that the field of family planning research will move more rapidly as family planning fellows move into their clinical, educational, and research careers.

The review of the Use of the Levonorgestrel Intrauterine System for Medical Indications in Adolescents was coauthored by a young woman who has just completed her residency in obstetrics and gynecology at the Oregon Health and Science University, Dr. Lisa Bayer [32]. Bayer is starting her family planning fellowship at Oregon Health and Science University; I anticipate that in the future she will make a difference not only to her patients, but also with her scholarly contributions to the field. She was a wonderful collaborator on this topic. In this review, we describe the use of the levonorgestrel intrauterine system (LNG-IUS) for medical indications ranging from heavy menstrual bleeding (a Food and Drug Administration–approved indication “for women who use intrauterine contraception as their method of pregnancy prevention”) to treatment of endometriosis and pelvic pain (“off-label,” but evidence-based, recommendations) to other options such as menstrual suppression for girls with developmental delay. Another recently published study in the *New England Journal of Medicine* supports the use of the LNG-IUS for treatment of heavy bleeding, although as is common, adolescents were not included in the study population [33]. Dr. Eve Espey wrote the accompanying editorial in which she argues for broadening the U.S. indication for the LNG-IUS to include not only women who choose it as a contraceptive method, but also to include all women with menorrhagia more generally, even if contraception is not needed [34]. The data clearly support this indication, and of course the LNG-IUS does not limit the use of an approved drug for such “unlabeled” uses, particularly those that are well supported in the medical literature [35].

Dr. Jeff Peipert and his family planning colleagues, Drs. David Eisenberg, faculty member, and Colleen McNicholas, family planning fellow, review cost as a barrier to LARC use in adolescents [36]. The Contraceptive CHOICE Project at Washington University in St. Louis is yielding a wealth of data and important findings—about contraceptive failure rates, counseling, LARC, and costs as barriers to effective contraception. In this project, when cost is removed as a barrier, LARC methods were chosen by nearly 70% of adolescents. Peipert’s research team is providing important scholarship that should inform our public debate about health benefits of effective contraception.

I would also like to call the reader’s attention to several additional recent articles with an accompanying editorial, published in the *Journal of Adolescent Health*, related to the use of LARC contraceptives [37]. Wilson et al reviewed data from the Pregnancy Risk Assessment and Monitoring System with data from 2006 to 2008 on the use of postpartum contraception by

more than 3,200 adolescent mothers, and showed that use of LARC methods had increased to 12% over reports from the same database from 2004 to 2005 [38]. The authors conclude that given the demonstrated association between LARC use and success in lowering rates of rapid repeat pregnancies, access to LARC should be increased. Barriers to LARC services include cost and staff concerns about the advisability of IUD use in teens who may not be mutually monogamous or in nulliparous adolescents, as addressed in a survey of publically funded family planning facilities [39]. Another barrier to the use of LARC methods that is highlighted in a survey of providers of reproductive health care is the lack of training in the procedures involved in IUD and implant insertion—a concern of pediatricians and internists [40].

Overall, based on the preponderance of evidence provided in the up-to-date and comprehensive reviews included in this supplement, LARC methods should be strongly considered for adolescents. Advocacy for greater awareness of these options is thus a thread. Take a careful look at the evidence presented in these reviews. LARC options make really good sense for many if not most teens. Our patients need to know that we believe these methods to be safe, extremely effective, easy to use, well tolerated, and long lasting. We can relate our experiences with teens and adults who are very satisfied with this “forgettable” option for contraception. And we will continue to work to make sure that this option is offered by clinicians, to minimize the barriers to provision (including cost, myths about risks, systemic barriers, and lack of awareness), to fully inform our patients about the benefits and potential risks, and to encourage our colleagues to help make a difference in our patients’ lives by lowering their risks of unintended pregnancy. Please read the reviews. I expect you then to be inspired to action. Visit the web site at <http://www.thenationalcampaign.org> and get active in your own communities. I foresee that LARC methods will contribute to a future in which more adolescents and young adults can postpone pregnancy until the time when a pregnancy is wanted and planned—with consequent benefits to those individual young women, their children, and to our society.

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